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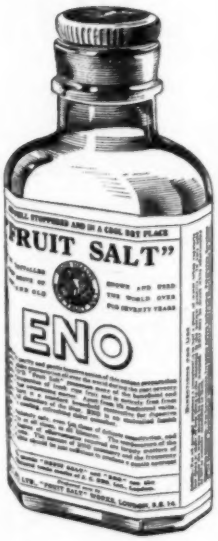

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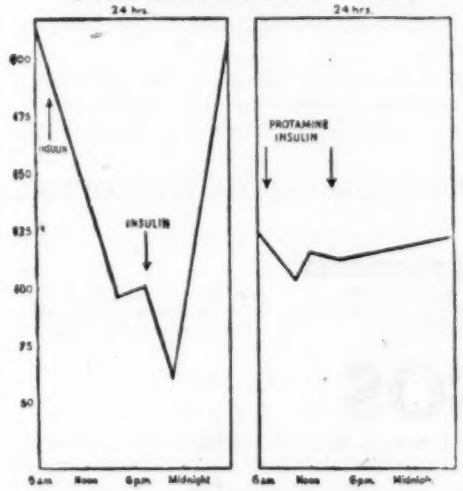

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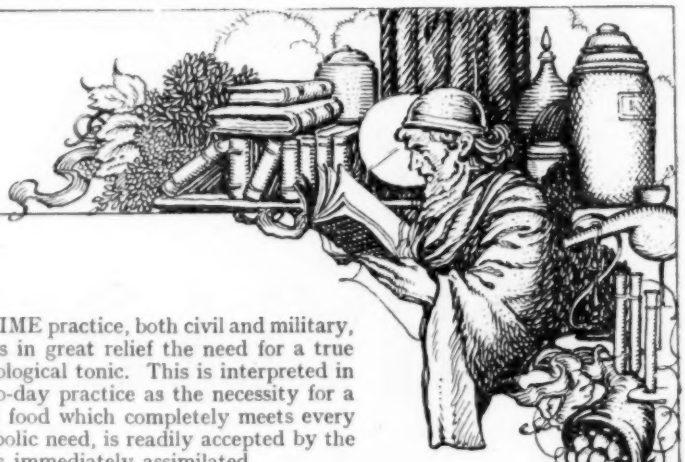

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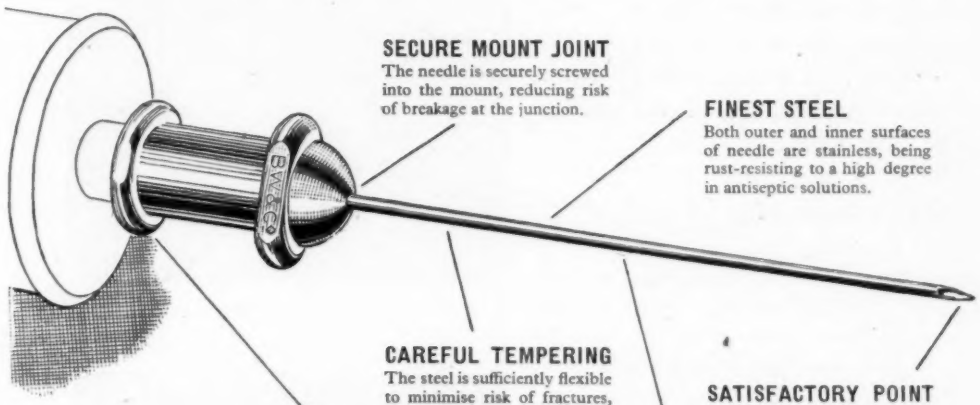

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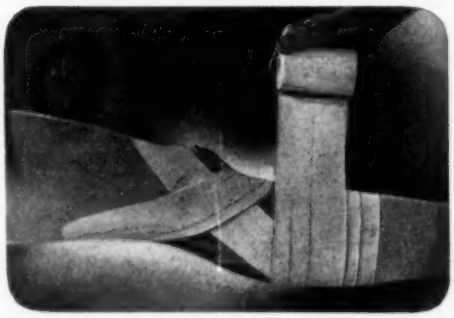

Treatment

2nd February.

The knee joint was aspirated and an 'Elastoplast' bandage applied in three pieces—

(*a*) inverted 'U' above patella;

(*b*) upright 'U' below patella;

(*c*) circular turns from middle of calf to 6 in. above knee.

3rd February.

The patient was able to walk with comfort.

17th February.

The 'Elastoplast' bandage had become loose, and was re-applied.

23rd March.

The 'Elastoplast' bandage was removed, and the patient given exercises to restore full power to the quadriceps.

30th March.

Full painless movement of the knee. Patient discharged.

☆ *The details given are of an actual case. The illustrations are made from photographs taken of this case.*

In the belief that such authentic records may be of general interest, the manufacturers of 'Elastoplast' are publishing these instances typical of the many in which their products have been used with outstanding success.

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'ELASTOPLAST' BANDAGES AND PLASTERS ARE MADE BY T. J. SMITH & NEPHEW LTD., HULL

ORIGINAL ARTICLES

PFEIFFER'S BACILLUS (INFLUENZAL) MENINGITIS

N. MUTCH, M.D. CAMB., F.R.C.P.
SENIOR PHYSICIAN TO GUY'S HOSPITAL; SECTOR ADVISER IN MEDICINE, E.M.S.

THE discovery of the virus of epidemic influenza diverted medical attention from an earlier preoccupation with *Hæmophilus influenzæ* of Pfeiffer. Disappointment had long been felt that the strain of this bacillus isolated from the respiratory passages rarely displayed much invasive power when inoculated into animals. It is remarkable therefore that meningeal infections caused by Pfeiffer's bacillus should prove so uniformly fatal and completely resistant to all therapeutic measures which have been tried. A number of examples of the condition have been noted in this country during the past year and the time is opportune for a review of our knowledge of the subject.

Most of the observations on the disease have been made in America, where it seems to be more common than in Britain. Slawyk [29] described the earliest case in which the diagnosis was established bacteriologically. Neal,[18] analysing 3139 cases, found that it was the fifth commonest American variety and accounted for 4·5% of all cases of meningitis. Fothergill,[6] recording 51 cases at the Children's Hospital, Boston, over a 4-year period during which there had not been any outbreak of epidemic cerebrospinal meningitis, found that it was the commonest type of all and represented 23·1% of the meningitis group. In this country it is comparatively uncommon, but since August, 1941, 3 undoubted cases and 2 other possible ones have been admitted to a Kentish Hospital of about 1000 beds. We may owe our comparative immunity to a higher individual resistance to Pfeiffer's bacillus acquired in this land of the common cold—an idea which receives support from the bacteriological findings in the cerebrospinal fluid. In American reports [2] the bacilli are described as occurring in strikingly great numbers. In the cases reported here the bacilli have been so few that they might easily have escaped notice. Possibly the disease is sometimes overlooked when laboratory facilities are inadequate. The bacteriologist often fails to see or grow any organism from cerebrospinal fluid submitted to him from patients with suppurative meningitis. There is a tendency to ascribe such failures to death of the bacteria during transport of the specimen or to the administration of sulphonamides before collection of the fluid; but it is conceivable that this unsatisfactory group may include a proportion of influenzal cases.

CASE-HISTORIES

CASE 1.—A soldier, aged 30, complained for 2 weeks of headache, giddiness and periodic weakness and sensation of swelling in his legs. Ambulatory, and given sick leave. Admitted on return with definite head retraction and occasional vomiting; normal cerebration. Temperature 101·6° F., pulse-rate 104, respirations 24 per min. C.S.F.: pressure 250 mm.; slightly opalescent; protein 0·09%; cells 46 per c.mm. (chiefly mononuclear); gram-negative bacilli seen resembling *H. influenzæ*; cultures sterile. Blood-serum agglutinated *H. influenzæ* from case 5 at dilution 1 : 40. Two normal controls agglutinated same organism at 1 : 20. White-cell count 13,300 with 70% of polymorphs. Treated with Sulphonamide E.O.S. (80 g. in 7 days). Temperature became normal in 24 hours. Head retraction disappeared in 36 hours. Recovery rapid, uninterrupted and complete.

Note.—Bacteriological diagnosis in this case not fully established. Prognosis far better at 30 than during infancy.

CASE 2.—A youth of 16. Acutely ill for 48 hours with headache, fever and vomiting. On admission semicomatose, with head retraction and positive Kernig's sign. Temperature 102·6° F., pulse-rate 108, respirations 26 per min. C.S.F.: pressure 280 mm.; turbid; protein 0·28%; cells 7,840 per c.mm. (polymorphs 98%); extracellular gram-negative bacilli seen resembling *H. influenzæ* but cultures sterile. Blood-count: white cells 14,900 with polymorphs. 79%. Treated with sulphonamide E.O.S. (80 g. in 7 days). Temperature normal in 48 hours. Recovery rapid, uninterrupted and complete.

Note.—Bacteriological diagnosis not fully established. Prognosis far better at 16 than during infancy.

CASE 3.—Infant, aged 17 months. Acute onset with fever and irritability. On admission, 36 hours later, quiet, considerable head retraction and positive Kernig's sign. Temperature 102·2° F., pulse-rate 116, respirations 44 per min. C.S.F.: pressure 90 mm. (rose later to 330 mm.); opalescent (thick pus later); protein 0·16% (rose later to 0·45%); cells 84 per c.mm. (990 per c.mm. later and visible clots of pus), polymorphs 92%; gram-negative bacilli seen in small numbers in six specimens and pure growth of *H. influenzæ* obtained from each. Treated by lumbar puncture and cisternal puncture and with sulphapyridine (34·5 g. in 14 days, and after an interval of a week a second course of 32 g. in 15 days). Partial defervescence during each course of sulphapyridine but general condition unaffected. Stertorous and unconscious by 36th day; death. Report on autopsy by Dr. S. J. Hopkins: Brain congested with flattening of the convolutions. Thick yellow pus over base, extending forwards and surrounding optic nerves. Lateral ventricles distended with thick yellow pus which extended throughout the ventricular system.

CASE 4.—Girl, aged 6 years. Acute onset with headache and vomiting 24 hours before admission. Semicomatose when first seen with moderate neck rigidity, Kernig's sign and opisthotonus. Restless with well-marked photophobia and meningitic cry. Temperature 102·4° F., pulse-rate 110, respirations 26 per min. C.S.F.: pressure 200 mm.; turbid; protein 0·24%; cells 4560 per c.mm. (polymorphs 97%); occasional extracellular gram-negative bacilli seen; pure growth of *H. influenzæ* on culture. Treated with sulphonamide E.O.S. (12·5 g. in 2 days). Day after admission respiration became deep and rapid. Blood-stained frothy sputum; Cheyne-Stokes respiration. Death after 62 hours of illness.

CASE 5.—Infant, aged 7 months. Onset with coryza 12 days before admission. Odd behaviour on 8th day of illness and right-sided twitching on 10th day. Not comatose until a few hours before death, but had tense fontanelle, muscular twitchings and head retraction. Temperature 100° F., pulse-rate 140, respirations 36 per min. C.S.F.: pressure 210 mm.; turbid; protein 0·1%; cells 1480 per c.mm. (polymorphs 92%); very occasional extracellular gram-negative bacilli seen on four occasions and pure growth of *H. influenzæ* obtained from each of six specimens. Treated with sulphapyridine (18 g. in 8 days), lumbar puncture, cisternal puncture, intrathecal and intravenous serum from case 1 and from normals. The fluid obtained by lumbar puncture on the 25th day of illness was almost pure pus but that obtained by cisternal puncture was only slightly opalescent. A day later at autopsy thick pus was found on the surface of the brain. Loculation, typical of this disease, was pronounced.

Report on autopsy by Dr. S. J. de Navasquez: Dura mater adherent to arachnoid by very thick greenish purulent exudate so abundant over cortex that in many areas over vertex superficial pattern could not be seen. On being stripped, dura retained some of exudate on its under surface. Cerebral convolutions flattened and sulci obliterated; large subarachnoid collections of pus in island of Reil, basal cisterns and around medulla and throughout the spinal theca. Ventricles filled with similar exudate. Brain substance very soft but devoid of intracerebral suppuration. Left lung showed some consolidation of lower lobe; remainder of lungs normal. Myocardium pale and soft from fatty change. Histology: brain showed a severe purulent meningitis, which in places had penetrated beyond the arachnoid, which could not be seen; pia intact in the sections examined. No intracerebral lesions. Gram-negative bacilli present in exudate, which on culture gave a pure growth of *H. influenzæ*. Lower lobe of left lung showed atelectasis and some hæmorrhage, but no inflammatory changes. Liver and myocardium showed fatty change only.

BACTERIOLOGY

As seen in the cerebrospinal fluid, the organisms are gram-negative and usually extremely pleomorphic. Although small bacilli are the predominant form, larger

bacilli, coccoid, diplococcoid and long filamentous forms are commonly seen. They cannot be cultured on ascitic or trypagar media but grow well on chocolate agar. Meningococci, pneumococci and haemolytic streptococci also multiply freely on this medium, a circumstance which greatly simplifies the routine investigation of material. Several types of *H. influenzæ* have been differentiated, the two principal categories, according to Pittman,[22] being: (*a*) rough forms, a heterogeneous group of feeble pathogenicity (strains isolated from the respiratory passages are usually of this kind); (*b*) smooth forms developing capsules, a homogeneous group strongly pathogenic and characteristic of strains isolated from the cerebrospinal fluid. Fothergill and Chandler [8] by repeated subculture of meningeal strains were able in time to dissociate from them a number of avirulent variants which grew in rough colonies, were serologically heterogeneous, and closely resembled the innocuous type which frequents only the respiratory passages. Rivers and Kohn [26] demonstrated the homogeneity of the meningeal types by agglutination reactions. Pittman [22] confirmed the fact by precipitin tests. Wright and Ward [32] showed further that the rough forms were easily killed by bactericidal substances present in the blood, but that the meningeal smooth forms were far more resistant and therefore more fitted to invade the tissues. It can thus be taken as a firmly established fact that the meningeal strains of *H. influenzæ* isolated in America are with few exceptions smooth strains and mostly belong to one serological type—Pittman's group b. It is desirable that strains isolated in this country should be collected by one central laboratory and examined culturally and serologically.

AGE AND RESISTANCE

Infants and young children are particularly prone to meningeal infections. The age-incidence graph of every common variety shows a peak at some point between the ages of 6 months and 2 years. Influenzal meningitis conforms to this general rule. Of Neal's 3139 cases, 65% were in patients under 2 years. Rivers,[25] reviewing 193 cases, found that 79% of the patients were under that age. For Bloom's [4] 49 cases the figure was 62% and for Fothergill and Wright's [11] 76 cases it was 75%. It is almost unknown during the first 2 months of life and is commonest between the ages of 6 and 9 months. The incidence gradually falls off to reach a very low figure by 3½ years.[9] Occasional cases are found among older children and adults. Fothergill and Wright found that the blood of normal adults possesses strong bactericidal powers against *H. influenzæ*. Blood from the umbilical cord at birth exhibited similar characteristics, but during the latter half of the first year of infancy the bactericidal power of the blood is lost. They were able to demonstrate a close reciprocal relationship in each age-group between the incidence of influenzal meningitis and the bactericidal potency of the blood of the population in general. The freedom of the adult from this infection was thus closely correlated with the development of an acquired immunity, and the lower fatality-rate among older children and adults was explained.

CLINICAL FEATURES

The meningeal infection is of a frankly suppurative type and gives rise to symptoms closely simulating those of other forms of suppurative meningitis. A common cold or other infection of the upper respiratory passages often precedes the meningeal symptoms.[27 11] The respiratory infection is not usually severe nor does it resemble infections with the influenzal virus; furthermore, meningitis due to Pfeiffer's bacillus is no more common during influenzal epidemics than at other times.[14] Dowds [5] has reported 2 cases in which the antecedent lesions were subcutaneous abscesses due to the Pfeiffer organism, but such cases must be very rare, and the usual portal of entry for the organism appears to be the mucosa of the respiratory tract. Fever, drowsiness, irritability, vomiting and neck rigidity develop rapidly as in cerebrospinal fever, but at times the onset may be as insidious as that of tubercular meningitis. Bacteræmia is a conspicuous feature [6] and blood-cultures may yield *H. influenzæ* persistently throughout the course of the disease. The prognosis is extremely grave and infants rarely recover. The patient may die during the first few days of illness (case 4) or death may be postponed for several weeks (case 3). In the latter event loculation of pus in the meninges usually occurs and it becomes impossible to relieve the symptoms of excessive intracranial pressure either by lumbar or cisternal puncture. Fluid withdrawn from below may then present characteristics widely divergent from those of fluid obtained from above. In spite of every effort to drain the subarachnoid space the pressure of the pent-up pus in various closed pockets may so compress the brain that all signs of the original convolutions are lost (case 5). Even in these circumstances, and with a thick stiff cream of almost inspissated pus lying over the surface of the brain, the patient may not lose consciousness entirely until the last. The outstanding feature of the disease is the inflammation of the meninges without any particular involvement of the brain.

Cerebrospinal fluid.—As withdrawn from the lumbar region, the cerebrospinal fluid may be opaque and turbid or merely opalescent. Leucocytes are abundant, the count varying from a few hundreds to several thousands per c.mm.; mononuclear cells are also found and may be as numerous as 200 per c.mm. Stained smears of the deposit show gram-negative bacilli and evidence of phagocytosis. Chlorides are low and protein and globulin are increased, the protein commonly ranging between 0·1% and 0·4%. The pressure may rise to values above 300 mm. of saline, but with the onset of loculation it tends to fall again to normal figures in spite of the high tension of pus imprisoned deeply in the skull.

DIAGNOSIS AND TREATMENT

Clinically the disease cannot be distinguished from other forms of suppurative meningitis. Diagnosis can only be established by bacteriological examination of the cerebrospinal fluid. In a certain proportion of cases the supernatant cerebrospinal fluid exhibits a precipitin reaction when mixed with the corresponding immune serum [6] but the usual diagnostic procedure is inspection of the gram-stained smear and incubation of the deposit inoculated on chocolate agar. Confirmatory culture is essential because other varieties of gram-negative bacilli sometimes cause meningitis—for example the salmonellas. The salmonella organism may occur in such pleomorphic forms in the cerebrospinal fluid as to mimic *H. influenzæ* [16] in stained smears of deposit. Bahrenburg and Ecker [3] collected 35 cases from the literature and many other cases have been reported in more recent years. Amongst the strains identified are *Salmonella schottmülleri* (*Bacterium paratyphosum B*), *S. enteritidis*, *S. paratyphi* (*Bact. paratyphosum A*), *S. panama*. The clinical features of salmonella meningitis resemble those of influenzal meningitis but a history of diarrhœa may replace that of respiratory catarrh. In each case the meningitis is of purulent type and polymorphonuclear leucocytes are numerous in the cerebrospinal fluid. The fatality-rate is very high in each disease, being 80 to 100% for influenzal meningitis and 91% in Bahrenburg and Ecker's collected salmonella cases. It will presently be shown that influenzal meningitis is resistant to sulphonamide therapy, but there are indications that salmonella infections can be controlled with these drugs.[16]

In so lethal a disease as influenzal meningitis the fatality affords a convenient inverse measure of the therapeutic success. At ages under 2 years the fatality is much greater than among older children and adults. Full consideration must be given to this fact in all attempts at comparative analysis. Among 78 cases admitted to the Boston Children's Hospital over a period of 12 years, Fothergill and Sweet [9] found only one case of spontaneous recovery. The following data are available:

—	Total cases	Fatality %		
		Mixed cases	Children under 2 yr.	Adults and children over 2 yr.
Rivers [25]	220	92	97	..
Bloom [4]	320	..	96·7	..
Neal, Jackson and Appelbaum [19] ..	111	100	100	..
Wilkes-Weiss and Huntington [30] ..	500	..	97·6	79·5
Fothergill and Sweet [9]	73	..	99	..

The presence of toxic substances in the filtrates of *H. influenzæ* cultures was first noted by Parker,[21] who prepared a corresponding immune serum. Utilising this product Wollstein [31] was able to protect the rhesus monkey from the effects of Pfeiffer cultures injected 24 hours earlier. Kolmer [17] noted that cerebrospinal fluid from patients with influenzal meningitis is devoid of complement, a fact which has been verified by Fothergill [7] and Ward.[10] Normal cerebrospinal fluid also is free from complement, but complement has frequently been detected in specimens from meningococcal and pneumococcal cases. Pittman [23] therefore gave intrathecal injections of human complement as a therapeutic measure but without success. Fothergill and Ward [10] prepared horse antiserum with strong bactericidal powers and high agglutinin titre. They showed that the bactericidal effect of complement + antiserum is far greater than that of white blood corpuscles + antiserum and concluded that the natural curative mechanism is one of complemental bacteriolysis. They treated 5 cases with a mixture of complement (normal human serum) and bactericidal horse serum injected by lumbar puncture, cisternal puncture, through the anterior fontanelle and into the lateral ventricles through trephine openings, but every patient died. Post-mortem examination revealed the usual loculation of pus in abscess-like cavities walled off from the general subarachnoid system. Rittenberg [24] was able to record a successful case two years later and in 1937 Fothergill [6] published a substantial series of 201 cases with a modified mortality of 84·6%. He had relinquished his heroic modes of injection and relied on simple lumbar puncture with occasional use of the cisternal route. This method has now been employed by many workers,[7 27 28] and the opinion is widely expressed [1] that Fothergill's serum and complement have no appreciable effect on the general course of the disease. Moreover the issue is not affected materially when guineapig complement [27] is used instead of human serum. The latest development of this type of therapy also comes from America. Goodner and his colleagues [12 13] showed that antipneumococcal serum from the rabbit is more effective than that from the horse and believed the difference to be due to the greater penetrating power of the smaller molecule of the rabbit immune bodies. Alexander [2] therefore prepared an anti-influenzal rabbit serum which is now in use clinically. Good results are reported to have followed its use [6] but a final assessment of its utility still remains to be made.

Sulphanilamide, sulphonamido-chrysoidin and sulphapyridine have each been used without definite success.[1 5 27] Aleman [1] has given an analysis of 82 cases treated with sulphanilamide and 18 treated with sulphapyridine. He also quotes substantial groups of patients treated with various combinations of these drugs and Fothergill's serum. On the whole the fatality-rates are a little lower than those recorded before the introduction of these drugs. But when the uncertainty of statistical deductions made from small numbers of cases is taken into account, and the inclusion of older children and adults in the series is noted, it is clear that proof of any benefit accruing from these drugs is still lacking. It can be stated dogmatically that in this disease the sulphonamides have not shown that unequivocal power of control which they exert over the corresponding meningococcal infections.

The problem of reducing the appalling mortality of influenzal meningitis has not yet been solved in spite of much endeavour. I would suggest that less effort be made to inject remedial agents directly into the subarachnoid space. The disease is essentially a septicæmia and a meningitis, not an encephalitis or a primary infection of the cerebrospinal fluid. The fluid itself is a poor culture medium, but the organism survives vigorously for 24 hours or longer after the patient's death in contact with the tissues. The meninges are well supplied with blood-vessels and curative bodies can most appropriately be introduced by that route.

SUMMARY

Pfeiffer's bacillus meningitis is well known in this country though it is less common than in America.

The responsible strains are capsulated gram-negative bacilli forming a single homogeneous serological group. Strains isolated from the upper respiratory passages are relatively avirulent members of the Pfeiffer group and are serologically heterogenous.

The disease is essentially one of infancy and does not often affect adults.

Specific bactericidal substances are present in the blood of members of the immune age-groups but their titre in children between the ages of 6 months and 2 years is low.

The clinical features are those of acute suppurative meningitis. Loculated collections of pus often form. Bacteræmia is common and persistent. The diagnosis cannot be established without bacteriological examination. Cultures (for example, on chocolate agar) must be made to differentiate the condition from those due to other gram-negative bacilli, such as *Strep. meningitidis*.

The prognosis is extremely grave and infants rarely recover. Serological treatment has not yet met with any definite success and the sulphonamides have not perceptibly affected the fatality among infants. The adult fatality-rate is far lower than that of infants; recovery-rates must therefore be correlated closely with age-grouping if the curative effects of sera and chemotherapeutic substances are to be assessed. Therapeutic assay could readily be made by studying the disease in infants of 2 years or under, and excluding adults and older children from the series.

REFERENCES

1. Aleman, R. (1940) *Med. surg. J.* **93**, 25.
2. Alexander, H. E. (1939) *Proc. Soc. exp. Biol. Med., N.Y.* **40**, 313.
3. Bahrenburgh, J. H. and Ecker, E. E. (1937) *J. infect. Dis.* **60**, 81.
4. Bloom, C. J. (1931) *Med. surg. J.* **83**, 455.
5. Dowds, J. H. (1940) *Lancet*, **2**, 100.
6. Fothergill, L. D. (1937) *New Engl. J. Med.* **216**, 587.
7. — (1935) *J. Pediat.* **6**, 374.
8. — Chandler, C. A. (1936) *J. Immunol.* **31**, 401.
9. — Sweet, L. K. (1933) *J. Pediat.* **2**, 696.
10. — Ward, H. K. (1932) *Amer. J. Dis. Child.* **43**, 873.
11. — Wright, J. (1933) *J. Immunol.* **24**, 273.
12. Goodner, K., Horsfall, F. L. and Dubos, R. J. (1937) *Ibid*, **33**, 279.
13. — — and MacLeod, C. M. (1938) *N.Y. St. J. Med.* **38**, 245.
14. Hayes, W. (1940) *Brit. med. J.* **1**, 500.
15. *Int. med. Dig.* (1941) **38**, 191.
16. Katsampes, C. P. and Bradford, M. D. (1940) *J. Pediat.* **16**, 79.
17. Kolmer, J. A. (1924) *Proc. Ass. Res. Nerv. Ment. Dis.* **4**, 71.
18. Neal, J. B. (1935) *J. Amer. med. Ass.* **105**, 568.
19. — (1938) *Ibid*, **111**, 1353.
20. — Jackson, H. W. and Appelbaum, E. (1934) *Ibid*, **102**, 513.
21. Parker, J. T. (1910) *Ibid*, **72**, 476.
22. Pittman, M. (1931) *J. exp. Med.* **53**, 471.
23. — (1933) *Ibid*, **58**, 683.
24. Rittenberg, B. B. (1934) *J. Amer. med. Ass.* **102**, 1674.
25. Rivers, T. M. (1922) *Amer. J. Dis. Child.* **24**, 102.
26. — Kohn, L. A. (1921) *J. exp. Med.* **34**, 477.
27. Silverthorne, N. and Brown, A. (1940) *J. Pediat.* **16**, 456.
28. — Fraser, D. T. and Snelling, C. E. (1937) *Ibid*, **10**, 228.
29. Slawyk, D. (1899). Quoted by Aleman, R. (1940) *Med. surg. J.* **93**, 25.
30. Wilkes-Weiss, D. and Huntington, R. (1936) *J. Pediat.* **9**, 462.
31. Wollstein, M. (1911) *J. exp. Med.* **14**, 73.

PFEIFFER'S BACILLUS MENINGITIS

RECOVERY WITH CHEMOTHERAPY

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A male infant, aged 1 year, was admitted to the County Hospital, Pembury, with a history of 24 hours' profuse vomiting, rigidity of the body, a fixed stare and drowsiness. He had been well till the onset of this illness, and there was nothing relevant in the history. He was extremely ill. Temperature 104° F., pulse-rate 150, respirations 60. He was pale, irritable and slightly dehydrated; there was some neck rigidity, but Kernig's sign was negative. Except for a few purpuric spots on the loins there was nothing else abnormal. Lumbar puncture showed turbid cerebrospinal fluid under slight pressure (not measured); protein 0·2%; 1600 polymorphs and 100 lymphocytes per c.cm.; chlorides 725 mg. per 100 c.cm.; no sugar. Direct smears showed small numbers of gram-negative bacilli of hæmophilus type. Culture gave a pure growth of *Hæmophilus influenzæ*.

Sulphapyridine (M. & B. 693) was given by mouth in the following doses: 1st day, 3½ g.; 2nd day, 3 g.; 3rd day, 3 g.; 4th day, 2½ g.; 5th day, 2 g.; 6th day, 2 g.; 7th day, 1 g. Total 17 g. The temperature fell to normal at the end of 24 hours and did not rise again. Although the child was much improved, he remained irritable for 3 days, and at the end of

4 days all symptoms and signs had disappeared. He was discharged fit on the 9th day after admission.

Although this case recovered with the administration of sulphapyridine, no claim is made that the recovery was due to chemotherapy—it may or may not have been fortuitous. But it is worth noting that the child had only one lumbar puncture. This is a procedure I have followed in all cases of meningitis since chemotherapy has proved so effective. In children, any therapeutic value the lumbar puncture may have had has now almost disappeared. Its usefulness is solely diagnostic. By watching the temperature and pulse charts, the clinical condition and the diminution of vomiting, restlessness and signs of meningeal irritation, the progress of any case can be easily assessed. Lumbar puncture need only be repeated in the rare cases where progress is unsatisfactory.

I am grateful to Dr. A. W. Taylor who did the pathological investigation.

PHOTOELECTRIC METHOD OF ESTIMATING HÆMOGLOBIN

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THE hæmoglobin content of blood can be accurately estimated by a photoelectric method. In the method to be described the absorption of green light by the pigment is determined by means of a vacuum photocell in conjunction with a Lindemann Electrometer, obtained from the Cambridge Instrument Company. The light source was a 12-volt 36-watt motor-car head lamp, supplied by six 2-volt 60-ampere-hour accumulators. This gave a light free from the erratic variations seen when a light supplied from the mains was used. The filament of the lamp was focused on the plate of the photocell by means of a lens (fig. 1). The current through the photocell caused by the incident light is determined by measuring the potential drop across a fixed resistance of 200 megohms, connected in series with a potential of 120 volts. The potential drop is measured by the Lindemann electrometer (fig. 2).

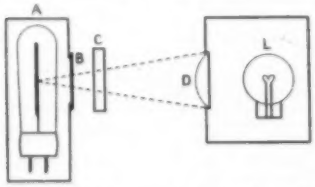

FIG. 1—Light passes from the lamp (L) through the condensing lens (D), the fluid cell (C) and a colour filter (B) to the photocell (A). L and A are enclosed in light-proof boxes.

The *photocell* is a General Electric Company's K.M.V.6 potassium-silver oxide type, which has a sensitivity to all parts of the visible spectrum, but not to the infra-red range. The linear relationship between light and current, a special advantage of this type of cell, is maintained as long as the potential across the cell is above saturation value (fig. 3). This cell is very stable and maintains its characteristics under varying conditions and over a long period of time.

Lindemann electrometer.—The needle of the electrometer is observed under a low-power objective, the eyepiece of the microscope having a graduated scale. There is a linear relation between voltage and needle deflection provided the plate potential is kept at a certain value. This plate potential is set by earthing one plate (by the switch S in fig. 2) and adjusting the voltage on the other to give a reading of 28 scale divisions. The other plate is then raised to the same potential, thus restoring the needle to its zero position. (Each scale division on the ocular field = 0·1 mm.; the microscope has a magnification of 60 ×.)

The *colour filter* used was an Ilford No. 807; this gives a well-defined band in the green which is sufficiently narrow for Beer's law [1] to be approximately obeyed. Beer's law states that the concentration of a pigment has a linear relationship to the optical density provided the light used is monochromatic.

The *diluting fluid* used for the blood samples is 1% saponin in 0·04% ammonia. Previous workers (e.g., Steinmann [2]) have advocated the use of stronger ammonia for the purpose of shifting the hæmoglobin dissociation curve to the left in order to ensure complete conversion of hæmoglobin to oxyhæmoglobin; but at the higher concentrations of ammonia (0·4%) conversion from oxyhæmoglobin to methæmoglobin and then to hæmatin is faster than was first imagined, as the following figures show.

Ammonia concentrations	Oxyhæmoglobin percentage		
	8 min.	60 min.	120 min.
0·4%	98·6	96	94·2
0·04%	98·4	98	98

This observation has also been made by Szigeti.[3]

To prepare a *calibration curve*, whole blood of a known oxygen capacity, previously determined by the method of Van Slyke, was diluted with varying proportions of diluting fluid. The optical densities were measured in a cell with a fluid depth of 5 mm. The curve relating optical density to O_2 capacity was nearly straight between 10 and 120% Newcomer (fig. 4). The oxygen capacities of blood from different individuals may be the same, but their hæmoglobin concentrations determined by this method may vary by as much as 2%. Blood from the same individual, however, gives constant concentrations by this method. This discrepancy is probably due to the presence of pigments other than oxyhæmoglobin (e.g., methæmoglobin). Minute traces of CO Hb often present in human blood create no significant error in hæmoglobin determination owing to the close correspondence of the extinction coefficients of oxy- and carboxy-hæmoglobin with the colour filter used.

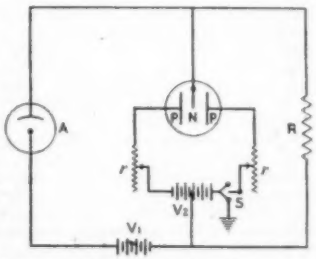

FIG. 2—Voltage-measuring circuit. A, photocell; N, electrometer needle; P, plates; r, plate potential resistances; S, switch for earthing one plate; R, 200 megohms resistance; V_1, 120-volt dry battery; V_2, 50-volt dry battery.

TECHNIQUE

In estimating hæmoglobin 20 c.cm. of the blood to be examined is diluted with 3 c.cm. of diluting fluid. Before the estimation is attempted the light must be switched on for at least 10 min., by which time the lamp has settled down to a constant illumination. If the illumination is constant there is no drift on the electrometer needle. The plate potential is adjusted as described above. The needle deflection caused by incident light (i.e., through filter B only) is then read (R_1). Then the needle deflection produced after transmission through the oxyhæmoglobin solution is read (R_2). A shutter is now placed in front of the cell, and the needle deflection when no light is transmitted is observed (R_3).

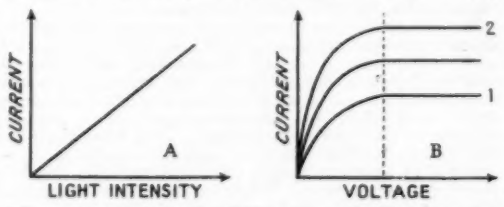

FIG. 3—Relation between voltage, current and light in a vacuum photocell. A, With voltages above saturation value current is proportional to light intensity. B, Relation between voltage and current for constant light (1) low light intensity (2) high light intensity. Note that unless a certain voltage ("saturation voltage") is maintained, the current is not independent of voltage for a given light intensity.

* Working on an M.R.C. grant.

1. Beer's law for monochromatic light: Optical density = $\log I_0/I = e\,c\,d = d\,(c_1c_1 + c_2c_2 \ldots)$. Where I_0 = incident light, I = transmitted light, e = specific absorption coefficient, c = concentration, d = thickness of solution.

2. Steinmann, B. *Arch. exp. Path. Pharmak.* 1938, **191**, 237.
3. Szigeti, B. *Biochem. J.* 1940, **34**, 1460.

As previously stated optical density of cell + pigment + diluting fluid (where zero on the scale equals no light).

$$= \log \frac{\text{Reading obtained with incident light}}{\text{Reading obtained with transmitted light.}}$$

$$= \log \frac{R_1 - R_3}{R_2 - R_3}.$$

The optical density of the cell plus diluting fluid alone is determined in a similar manner. This latter factor, which is constant, is subtracted from the total optical density, the difference being the optical density of the pigment alone. The actual hæmoglobin percentage (Newcomer) may be read from the curve (fig. 4), or, over a small range, by multiplying by a constant factor, since the curve is almost a straight line. The reliability of the apparatus may be checked periodically by measuring the optical density of a standard neutral filter.

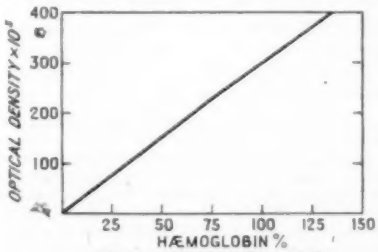

FIG. 4—Relation between optical density and oxygen capacity of blood. Haemoglobin values (Newcomer) can be read off direct on horizontal scale.

The accuracy of the method has been tested by repeated determinations on samples of oxalated blood. The standard error is 0·4%.

TREATMENT OF BEDCLOTHES WITH DUST-LAYING OILS

USE OF OIL-IN-WATER EMULSIONS

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IT has previously been shown that very large numbers of dust-borne organisms are liberated from bedclothes during bedmaking, and we have described a method of reducing these which is effective both in the laboratory (van den Ende, Edward and Lush 1941) and in hospital wards (Thomas and van den Ende 1941, van den Ende and Spooner 1941). The method consisted of the application of pure, medicinal liquid paraffin to the bedclothing from a 30% solution of the oil in a light petroleum solvent (white spirit). Supplies of medicinal paraffin are, however, limited and its application from such an organic solvent introduces an unnecessary fire hazard. Moreover, the process is expensive unless the solution is recovered during the laundering process and used repeatedly, and recovery requires special installations and modifications to the usual hospital laundry plants. But the method, although perhaps unsuitable for adoption on a large scale, is highly effective in reducing the number of organisms distributed into the air during bedmaking. Its possible importance in preventing the spread of infection and the relative simplicity of the principles involved have stimulated further research. The results of experiments designed to find substitutes for liquid paraffin and to simplify the method of application form the subject of this paper.

USE OF TECHNICAL WHITE OIL

The shortage of paraffinum liquidum B.P. has recently led, in the fourth addendum to the B.P. 1932, to the introduction of paraffinum liquidum leve B.P. which is similar to the paraff. liq. leve B.P.C. 1934. This is a highly refined, inert mineral oil with a lower density and viscosity than the original oil, and represents the most refined type of what are known technically as "white oils." These white oils are available in considerable quantities, and we have used one differing from the new B.P. product only in having a higher acid value—that is, in being slightly less highly refined.*

We have confined our work to the more highly refined white oils, since the less refined yellow spindle oils, although equally effective, cheaper and more readily available, all possess carcinogenic properties to a greater or lesser degree. Carcinogenicity must obviously be excluded when an intimate contact between the oil and the patient's skin cannot be avoided. Mr. J. M. Twort of the Cancer Research Dept., University of Manchester, has tested the oils which we have used, and reports them to be non-carcinogenic.

Twort showed that the alteration of refractive index of many oils after intraperitoneal injection into mice is related to its carcinogenicity (Twort and Lyth 1935, Twort, Lyth and Twort 1937, Twort and Twort 1938). Non-carcinogenic oils remain unchanged or exhibit a very slight alteration (0·0003), while the refractive index of the highly active oils falls considerably (0·0040 to 0·0250 according to viscosity). The physical properties of the refined white oils referred to above and their specific refractive increments as tested by Mr. Twort are recorded in table I. Dr. W. E. Gye is testing these oils for us by direct painting experiments on mice.

For laboratory tests technical white oil was first applied from solution in white spirit in the same way as liquid paraffin in our earlier experiments. In addition, technical white oil with which had been incorporated 20% of ammonium oleate as an emulsifying agent ("soluble technical white oil") was applied in organic solution to determine whether the presence of a wetting agent in any way interfered with the dust-laying properties of the oil. The amount of oil absorbed by various textiles from solutions of different concentrations in white spirit was determined by ether extraction in a Soxhlet apparatus. It was found that woollen and cotton materials retained approximately 3% and 9% by weight respectively of the oil when soaked in a 20% solution in white spirit. This amount retained is slightly higher than the amount of medicinal liquid paraffin retained by the textiles after treatment with a 30% solution of liquid paraffin in white spirit. The appearance and feel of the textiles treated with technical white oil in this concentration are not appreciably altered.

To test the dust-laying effect, strips of the various textiles were infected either with a serum-broth culture of a Lancefield's group C hæmolytic streptococcus and allowed to dry in the incubator overnight, or with a powder of dried streptococci mixed with autoclaved floor dust. They were then mechanically beaten in a specially constructed machine, which was used also in earlier experiments with medicinal liquid paraffin (van den Ende, Edward and Lush 1941). The numbers of bacteria liberated from treated textiles were compared with those from similarly infected control strips, counts being made up to 12 min. after beating. The amount of visible dust liberated by the beating was roughly measured with a photoelectric attachment. The results of these experiments, which are summarised in table II, showed that both ordinary and soluble technical white oil were efficient dust-layers. Applied in a 20% solution, the mean reduction was 96·6% for dry and 100% for wet organisms. This reduction is as good as that previously obtained with a 30% solution of liquid paraffin in white spirit.

OILS APPLIED FROM STABLE WATERY EMULSIONS

The textile industry employs a wide variety of oil-in-water emulsions during spinning to ensure pliability of the yarn; this oil is later removed by washing the woven fabric in water. The use of similar emulsions for the application of dust-laying oils to bedclothes would greatly simplify the oiling process and reduce the expense of the process. Organic solvents are unnecessary and the oil can be added to the rinsing tank, thus obviating the necessity for additional laundry equipment. Furthermore the ease of washing bedclothes treated with "water-soluble" oil instead of ordinary liquid paraffin greatly simplifies the laundering of bedclothes after use.

Preliminary experiments with "soluble" oils showed that the nature of the emulsion was of prime importance.

* This oil, refined by the Manchester Oil Refinery Ltd., was supplied to us by Stemco Ltd., and is referred to as "Technical White Oil." Other white oils which are available include "Marcol" and "Wyrol B" (both of American manufacture) and "Puremore" (English manufacture).

TABLE I—PHYSICAL PROPERTIES OF SOME "WHITE MINERAL OILS"

Oil	Density	Redwood viscosity (sec.)		Kinematic viscosity (Centistokes)		Refractive index *	Refractive increment (mouse test) *	Biological activity
		70° F.	100° F.	37° C.	25° C.*			
Paraff. liq. B.P. 1932	0·880–0·895	810	260	..	..	..	..	..
Paraff. liq. leve B.P. (4th add 1941	0·835–0·875	Not defined		37·1	..	..	..	..
Technical white oil (English)	0·865	125	71	33·1	27·6	1·4645	0·0002	Inert
Technical white oil "Marcol" (American	0·850	140	76	36·6	28·0	1·4648	0·0001	Inert
Technical white oil "Puremore" (English)	0·850	..	..	..	25·7	1·4704	Nil	Inert

* Mr. J. M. Twort has kindly supplied these figures.

Oils emulsified with oleates and stearates alone were unsuitable, since the final emulsion was not stable in the centrifuge. These dense white emulsions broke down in the hydro-extractor, the result being an uneven oiling of the clothing. We came, therefore, to regard any opaque creamy white emulsion as unsuitable. The majority of commercial oils and those prepared with many of the commercial emulsifiers fell into this class and were discarded without further investigation. A number indeed had to be discarded earlier on account of the low degree of refinement of the mineral oil used in their manufacture. Some were crude kerosenes, others spindle oils with the addition of suitable emulsifiers. These crude oils were not applied to bedclothes on account of their potential carcinogenic activity. A number of commercially available oils prepared from high-grade white oils were supplied to us in translucent, centrifuge-stable emulsions in water. Two of them (Olinol nos. 1 and 2) have been used in hospital trials as well as in laboratory tests. These contain 35% and 65% respectively of white oil emulsified with sulphonated naphthenic hydrocarbons which in themselves may have some bactericidal action. Mr. J. M. Twort tested a sample of olinol no. 1 for us, and found that there was a very slight fall in refractive index (0·0016) after recovery from injected mice.

The general principles underlying the preparation of stable oil-in-water emulsions have been extensively investigated (Schulman and Cockbain 1940, Alexander and Schulman 1940, Rideal and Schulman 1939). Briefly, to obtain a stable emulsion, the emulsifying complex must contain an oil-soluble and water-soluble fraction. Under these conditions, molecules of both types are held at the oil water interface, and the emulsion remains stable. Much of their work on mineral oil ("Nujol") emulsions was done with long chain alcohols and higher alkyl sulphates as the oil-soluble and water-soluble agents respectively. On this basis we have been able to prepare emulsions of "white oils" in water in which the oil dispersion is so fine that the final emulsion is almost transparent. For these experiments we tested a number of emulsifying and wetting agents—cetyl alcohol, cetyl pyridinium bromide, sodium lauryl sulphonate, triethanolamine oleate, oleic acid, ammonium oleate, sodium and aluminium stearate, and a large number of commercial agents. We finally found that the most suitable solutions or permanent fine emulsions could be prepared from technical white oil, cetyl

TABLE II—DUST-LAYING EFFECT OF "TECHNICAL WHITE OIL"

Material	Test organism	Percentage oil used for treatment	Bacterial counts (untreated textile)		Bacterial counts (treated textile)		Amount of visible dust liberated		Per cent reduction in bacterial counts	
			A	B	A	B	untreated	treated	A	B
Wool ..	Streptococcus C sprayed	10 TW	450	152	40	3	+ +	tr	91·1	98·0
,, ..		20 TW	..	..	90	0	..	—	80·0	100
,, ..		30 TW*	..	..	20	0	..	—	95·5	100
Wool ..	Dry streptococcus C	10 TW†	1550	336	177	5	+ + +	+	88·5	98·5
,, ..		20 TW†	..	..	?112	1	..	—	? 92·7	99·8
,, ..		30 TW†	..	..	97	2	..	—	93·7	99·4
Cotton (sheet)	Streptococcus C sprayed	10 TW	2400	1050	160	7	+ + + +	+	93·2	99·4
,, ..		20 TW	..	..	60	1	..	tr	97·5	99·9
,, ..		30 TW	..	..	†	5	..	—	..	99·5
Wool ..	Dry streptococcus C ‡	10 STW†	1600	308	418	40	+ + + +	tr	73·8	86·9
,, ..		20 STW†	..	..	262	19	..	—	83·5	93·8
,, ..		30 STW†	..	..	256	6	..	—	84·0	98·0
Cotton (sheet)		10 STW	912†	104†	288	3	+ + + +	—	68·4	97·1
,, ..		20 STW	..	..	100	3	..	—	89·1	97·1
,, ..		30 STW	..	..	44	0	..	—	95·2	100

TW = technical white oil. STW = technical white oil with 20% emulsifier (ammonium oleate). A = during the first 2 min. after beating. B = during the 5 min. period 7–12 min. after beating. * = too greasy to the touch. † = average of two experiments. tr = trace. ‡ = only results of experiments in which dry streptococci were used are given. The results of experiments with sprayed organisms were better, but since this effect can be attributed partly to the bactericidal action of the emulsifier against wet organisms the results cannot be included in tests for dust-laying power.

TABLE III—DUST-LAYING EFFECT OF OILS (OLINOL 1 AND 2) APPLIED FROM FINE STABLE WATERY EMULSIONS

Material	Test organism	Percentage oil (in water) used for treatment	Bacterial counts (untreated textile)		Bacterial counts (treated textile)		Amount of visible dust liberated		Per cent reduction in bacterial counts	
			A	B	A	B	untreated	treated	A	B
Wool ..	Dry streptococcus C	12·5 oil 1	488	96	264	12	+ +	tr	45·8	87·5
,, ..		25 ,,	..	..	28	4	..	—	94·3	95·8
,, ..		50* ,,	..	..	9	0	..	—	98·1	100
Wool †† ..		20 ,,	1896	396	93	10	+ +	? tr	95·2	97·5
Cotton (sheet)		12·5 ,,	2400	672	1040	60	+ + +	+	56·6	91·1
,, ..	Streptococcus C sprayed	12·5 ,,	432	84	5	0	+ + +	tr	98·8	100
,, ..	Dry streptococcus	25 ,,	944	116	108	2	+ + + +	—	88·6	98·4
,, ..	Streptococcus sprayed	25 ,,	368	50	2	0	+ +	? tr	99·4	100
Wool ..	Dry streptococcus	12·5 oil 2	488	96	100	2	+ +	—	79·5	97·9
,, ..		25 ,,	..	..	41	1	..	—	91·5	99·0

A = during the first 2 min. after beating. B = during the 5 min. period 7–12 min. after beating. * = too greasy to the touch. †† = samples of actual blankets used in hospital trials.

alcohol, Turkey red oil (sulphonated castor oil), ester salts (a homologous group of secondary higher alkyl sulphates with a carbon chain length of 10 to 18), and cresylic acid in various proportions. Details of two oils (nos. 8 and 12) prepared with these ingredients are:

Oil No. 8	Parts by weight
Sulphonated castor oil (50% neutral finish)	210
Technical white oil	105
Ester salts solution (25% active materail in water)	105
Cetyl alcohol ..	30
Cresylic acid ..	50

Oil No. 12	Parts by weight
Sulphonated castor oil (50% neutral finish)	225
Technical white oil	175
Ester salts powder (60% active material)	70
Cetyl alcohol ..	70
Cresylic acid ..	70

Dissolve cetyl alcohol in technical white oil with aid of heat, stir in sulphonated castor oil, followed by ester salts and cresylic acid. Sodium sulphate deposits in oil no. 12 on standing and the clear oil is decanted next day. These oils are a clear dark brown colour and give instantaneous, transparent emulsions in water. Sulphonated castor oil, although soluble in water in all proportions, is not suitable for application alone to fabrics, as it renders them rather hard and sticky and is by itself not an efficient dust-layer.

LABORATORY TESTS WITH OIL-IN-WATER EMULSIONS

Dust-laying effect.—Laboratory tests were made with the following soluble oils: oil no. 8, oil no. 12, olinol no. 1, olinol no. 2, Amoa A3 mixed with an equal volume of technical white oil, sulphonated castor oil (50% neutral finish) and sulphonated castor oil containing 10% cresylic acid. The results were compared with those obtained with technical white oil applied from solution in white spirit. Textiles treated with various concentrations of these oils were also assayed for their content of ether-soluble oil by extraction in a Soxhlet apparatus. Blankets treated with a 20% solution of oil no. 8, amoa and technical white oil, olinol and olinol no. 2 absorbed approximately the same amount of ether soluble oil as blankets treated with a 20% solution of technical white oil in white spirit. The dust-laying effect of these oils was tested in the same way as previously described for technical white oil.

TABLE IV—BACTERICIDAL ACTION OF OILS IN BROTH AGAINST VARIOUS ORGANISMS. CONTACT FOR 24 HOURS AT 37° C.

The figures refer to the highest dilution of the oil in broth which is bactericidal.

Oil or emulsifier	B. hæmolytic streptococcus Group C	*Staphylococcus aureus*	*Bact. coli*	*Proteus*	*Ps. pyocyanea*
No. 8 ..	1280	640	1024	512	256
No. 12 ..	1280	640	1024	256	128
Olinol 1 ..	640	160	256	128	64
Technical white oil + Amoa A3	320	160	256	128	128
Amoa A3 ..	640	160	1024	256	256
Ester salts ..	320	320		Not tested	
Crude naphthenic sulphonates	1280	1280		,, ,,	

The results of these tests (table III) show that the dust-laying effect of oil applied from fine emulsions in water is as striking as that of oil applied from organic solutions. The oil treatment had apparently a much greater effect in preventing dust-borne infection from the fabrics infected with sprayed organisms than from those in which the fabric was treated with dry organisms. This was subsequently shown to be due to the bactericidal action of the various emulsifiers, and presents an added advantage where the natural infection of blankets, &c. depends on the deposition of relatively large, moist droplets from the upper respiratory tract. This bactericidal action is borne out by direct tests, and is also apparent in hospital trials with blankets oiled by this method.

The *bactericidal action* of the oils, and of the crude emulsifying agents, was tested against *Streptococcus pyogenes* (group C), *Staphylococcus aureus*, *Proteus*, *Bacterium coli* and *Pseudomonas pyocyanea*, both in vitro and after application to blankets. For tests in vitro serial dilutions of the oil in broth were inoculated with a standard dose (about 2 million) of an overnight culture of the test organism, and stroke cultures were made on appropriate solid media after varying incubation times up to 24 hr. Subcultures were also made into broth of sufficient volume to avoid the bacteriostatic effect of the oils. All the oils tested were bactericidal in high dilutions, oils nos. 8 and 12 proving the most potent. This is probably due to the fact that they contain cresylic acid as well as the emulsifying agent. *Strep. pyogenes* and *Bact. coli* were most easily killed, *Staph. aureus* and *Proteus* being more and *Ps. pyocyanea* most resistant (table IV). Dilutions of 1/64, however, killed all the organisms in every case.

TABLE V—BACTERICIDAL EFFECT OF DUST-LAYING OILS AND EMULSIFYING AGENTS ON A WOOLLEN BLANKET AGAINST WET AND DRY STREPTOCOCCI

Treatment of blanket	Plate counts A	Plate counts B	Total organisms in test fabric	Per cent. reduction
IMPREGNATION WITH COARSE SPRAY OF SERUM BROTH CULTURE				
Technical white oil in white spirit ..	7700	Uncountable	154,000	
Oil No. 8	0	0	0	100
Oil No. 12 ..	0	0	0	100
Olinol 1	2	2	40	99·9
Technical white oil and Amoa A 3 ..	48 34	30 43	780 770	99·5 99·5
Turkey red oil ..	43	27	700	99·5
Turkey red oil and 10% cresylic acid	4	7	110	99·9
IMPREGNATION WITH DRY STREPTOCOCCI AND STERILE DUST				
Technical white oil In white spirit	1 4000 2 560	3920 482	$15·84 \times 10^6$ $20·84 \times 10^6$	
Oil No. 8 ..	1 71 2 14	64 11	$0·27 \times 10^6$ $0·5 \times 10^6$	97·9
Oil No. 12 ..	1 220 2 23	254 16	$0·95 \times 10^6$ $0·78 \times 10^6$	95·3
Olinol 1 ..	1 432 2 51	424 37	$1·71 \times 10^6$ $1·76 \times 10^6$	90·4
Technical white oil and Amoa A 3 ..	1 1864 2 143	1928 129	$7·58 \times 10^6$ $5·44 \times 10^6$	64·5
Turkey red oil	1 2000 2 270	2224 294	$8·45 \times 10^6$ $11·28 \times 10^6$	46·2
Turkey red oil and 10% cresylic acid ..	1 1016 2 96	880 104	$3·79 \times 10^6$ $4·00 \times 10^6$	78·8

A and B are duplicate samples. 1 = no. of organisms from 0·5 c.cm. of a 1/20 dilution of the broth washings of the test fabric. 2 = no. in 0·5 c.cm. of a 1/200 dilution.

This antiseptic action in broth is paralleled by the activity on blankets against wet organisms (table v). To show this, strips of blanket were oiled in the usual manner, and small squares were equally inoculated either with a coarse spray of a serum broth culture of *Strep. pyogenes* (group C) or with a mixture of dried organisms and sterile, finely sieved dust. The strips were left overnight, then small squares (1/9 sq. in.) were cut from the centre of each and transferred to screw-capped bottles containing 100 ml. broth and a number of glass beads. These were shaken vigorously for 10–15 min., and appropriate amounts were plated out into blood-agar. Colonies were counted after 48 hr. aerobic incubation. Control tests were made with untreated blanket and with blanket treated with technical white oil in white spirit (which has no bactericidal activity). In all cases with the wet organisms, the final counts showed a minimum kill of 99·5%. With dry organisms there was less striking reduction. The greatest was with oil no. 8, which gave total counts of approximately 300,000 per blanket

square compared with control counts of 18 million. These tests with dry organisms were, however, subject to a number of possible errors which make their interpretation difficult. The size of the test squares and the infecting dose were judged as carefully as possible, but when infection of the fabric (far greater than is likely to occur naturally) is produced with a dry powder of streptococci, even small errors in measurement of infective dose would produce a large final difference. Moreover, there is the possibility that in spite of vigorous shaking the organisms in the depths of the fabric are not liberated sufficiently quickly, so that on contact with the broth the oil would exert its bactericidal action as against wet organisms. The reduction in bacterial count after application of dry organisms has, however, been shown repeatedly; and it seems reasonable to conclude that some bactericidal action was shown against dried organisms, although it was not as great as against organisms applied in the presence of moisture.

HOSPITAL WARD EXPERIMENTS

Two clean sets of blankets, sheets, pillow-cases, counterpanes and pyjamas, each sufficient for a single bed cubicle, were treated with olinol no. 1 and no. 2 respectively. Each set of bedclothes was thoroughly soaked in a 20% water solution of the oil, spun in a hydro-extractor and finally dried in the hot-air drying chamber.

Our experimental work in hospitals has so far been done with initially clean bedding, and we have used a separate soaking tank for applying the oil (as a 20% solution). This is unnecessary when one has to deal with dirty "linen" which is being washed in the ordinary laundry rotary washing machine. These machines perform the complete washing and rinsing process without removal of the linen, and it is usual to finish with one warm and two cold water rinses. The amount of water used is measured in inches by an indicator on the back of the machine; it is not difficult to calculate the amount of water introduced for the final cold rinse in gallons, and also the amount of oil which has to be added to this to give a 20% solution. This amount of oil can then be added through a vent, with which all the machines are fitted, at the beginning of the last rinse for each charge of linen. There is thus no need to open the machine at all. A run of 8–10 min. is sufficient to ensure impregnation of all the clothing, which can then be transferred to the hydro-extractors and spun. The effluent from these can be collected in a tub by substituting a right-angled outflow instead of the usual vertical one which normally runs direct to waste (the outflow is only fixed by two bolts through a gasket, so that such an alteration is simple and inexpensive). When sufficient has been collected in the tub, the first cold rinse in the washing machine can be let out, and instead of filling up with cold water and fresh oil, the machine opened and the contents of the tub tipped in for the second rinse. This process can be repeated several times and results in very little waste.

Two extra blankets were included with those for the trial with olinol no. 1. One of these was cut in two, half being left untreated as control and the other half treated. These halves were used in laboratory tests for assay of oil content and dust-laying properties. The treated half was found to contain 3·35% and the control 1·6% of ether-extractable oil.

The presence of 1·6% of ether-soluble oil in untreated blankets is unusual unless the blankets are new. Usually after repeated washing hospital blankets contain less than 1% of "oil." A sample of the natural oil which has been extracted with ether in a Soxhlet apparatus has been tested for us by Dr. C. Rimington. He concluded that it was probably lanolin. Reapplied to a repeatedly washed blanket strip it resulted in moderately effective dust-laying. Similarly a dust-laying effect is observed after the application of commercial lanolin. The application of lanolin, however, requires the use of organic solvents, and the texture of textiles treated with it is somewhat unpleasant in comparison with that after mineral oil treatment.

The dust-laying effect of the treatment was also shown in laboratory tests on strips of these blanket samples (table VI). The second blanket was also divided in two and both halves were treated. Half was placed at the periphery of the hydro-extractor and the other half at the centre, both being subsequently assayed for oil content. The object of this was to determine whether this method of soaking and centrifugation resulted in a uniform impregnation of the blankets. That this is so is shown by the fact that the peripheral and central halves contained 3·3% and 3·4% respectively of ether-soluble oil.

TABLE VI—DUST-LAYING EFFECT OF VARIOUS OILS AND EMULSIFYING AGENTS ON STRIPS OF HOSPITAL BLANKET
Test organism: dry streptococci

Treatment	Bacterial counts		Visible dust liberated	Per cent. reduction in bacterial counts	
	A	B		A	B
None	340	180	++		
20% Turkey red oil in water	224	60	+	34·1	66·7
20% technical white oil in white spirit	9	1	−	97·4	99·4
20% oil no. 12 in water	28	0	−	91·7	100
20% oil no. 8 in water	35	3	−	89·7	98·2
20% (Amoa A 3 + technical white oil equal parts) in water	4	0	−	98·8	100
20% (Turkey red oil + 10% cresylic acid) in water	290	42	+	14·7	76·7

A, during the first 2 min. after beating; B, during the 5-min. period 7–12 min. after beating.

Oil assays were also made on the liquor from the soaking tank as well as from the hydro-extractor outflow at the beginning, during, and at the end of its run. The amounts of ether-soluble material recovered from these samples did not differ significantly. It was concluded, therefore, that the liquor recovered from the hydro-extractor can justifiably be returned to the soaking tanks for further use.

On the day on which the bedding was treated, two patients were admitted to single-bed cubicles (similar to those used in our previous experiments). One was suffering from acute streptococcal tonsillitis (type 12/27) and the other from facial erysipelas (streptococcus type 3). The cubicles were carefully cleaned, the floors treated with spindle oil, and the men placed in clean bedclothes from the linen store. The patients were left for 48 hr., when air-counts were made on 5 c.ft. volumes of air before, during and after vigorous bedmaking. Air samples were taken on to gentian-violet blood-agar plates with a slit sampler (Bourdillon, Lidwell and Thomas 1941). The colonies were counted after 24 hr. aerobic incubation of the plates. All the bedding was then removed, the oiled bedclothes substituted and similar counts made daily for 8 days. In each cubicle the control counts were approximately 2000 per c.ft and large numbers of type-specific streptococci were recovered from the air during and after bedmaking. The mean reduction of organisms liberated from the oiled blankets during vigorous bedmaking was 99·4% and 98·5% in the two cubicles respectively. It is significant that at no time during the period when treated bedclothes were used was a single streptococcus recovered from the air in spite of the fact that the organism could constantly be isolated from both patients. In our previous experiments with liquid paraffin, although treatment of bedclothes with the oil resulted in reduction in numbers, we usually recovered small numbers of streptococci from the air during the test period, and these numbers tended to increase with time. It seems reasonable to conclude therefore that the oil had exerted a bactericidal action on the streptococci deposited on the blankets. This finding could best be accounted for if the streptococci were deposited in a moist state, as would be the case if they were deposited in large droplets from the respiratory tract.

The reduction of the numbers of air-borne bacteria was not wholly due to this bactericidal action, but was at least in part due to the reduction in the amount of dust liberated from the bedclothes. This could be shown by collecting with a slit sampler the dust liberated by shaking the blankets, on stationary glass slides instead of rotating plates of nutrient medium.

DISCUSSION

Our experiments have shown that mineral oils other than liquid paraffin may be used to lay the dust on bedclothes. A number of these oils are available. The cruder ones, such as the spindle oils, are carcinogenic and unsuitable for application to bedclothes where intimate contact between the patient's skin and the oil are unavoidable. The dermatitic factor has also to be considered, and while more highly purified and inert oils are available these should be used. Such oils are the highly refined white oils, and all the oils of this type which we have tested have proved to be efficient dust-layers.

The fact that these oils, with the aid of suitable wetting and emulsifying agents, can be made to give centrifuge-stable emulsions with water overcomes the original difficulty of application from an organic solvent, and makes large-scale treatment of bedclothes a practical possibility in hospital laundries. We have shown that these oil-in-water emulsions are almost as efficient dust-layers as the oils applied from white spirit, and that the emulsifiers used are themselves bactericidal under natural conditions. This action is most pronounced against wet organisms and is relatively slight against dry bacteria.

The killing of dried organisms is probably not of such practical importance as the killing of those in the large, moist droplets exhaled from the upper respiratory tract. Hare (1940) demonstrated a downward stream of such droplets from the mouth and nose of infected persons, and from the numbers of streptococci which we have previously shown to accumulate in blankets in relatively short times, each of these droplets must contain very large numbers of organisms. Bourdillon and Lidwell (1941), by means of flash photography, have shown that the number of large droplets expelled during a sneeze is enormous, and since a person normally lowers his head when sneezing the number of organisms projected on to the bedclothes when a person in bed sneezes is very great. Under normal circumstances these droplets would then dry and remain as potentially infective particles to be liberated when the bedding is shaken. It is important that bedclothes treated with the soluble oils not only retain most of the organisms within the actual fabric but also kill the organisms in these droplets before they can dry. Furthermore, the application of oils from stable watery emulsions renders the process much less expensive, frees it from the danger of fire, and makes it practicable even for modestly equipped hospital laundries.

SUMMARY

Technical white oils are effective dust-layers for bedclothes and are not carcinogenic.

These oils can, by the use of suitable emulsifying and wetting agents, be made to give centrifuge-stable emulsions in water. Such oil-in-water emulsions provide an easy method of applying the oil to bedclothes, and a large-scale method is outlined.

The emulsifying agents used in making these "soluble" oils impart to the bedclothes potent bactericidal activity which has been shown to be effective against moist droplets both in the laboratory and in hospital trials. Their bactericidal action against dry organisms was slighter.

The use of soluble oils in hospital trials resulted in a 99% reduction in the number of organisms liberated during bedmaking. No hæmolytic streptococci were liberated from the treated bedclothes of two patients with hæmolytic streptococcus infections. This can be explained at least in part by the bactericidal action of the oil against moist organisms, especially if the infection of the bedclothes is regarded as being derived from large droplets from the respiratory tract.

We are indebted to Mr. J. W. C. Phillips for his advice and interest; Mr. J. M. Twort and Dr. W. E. Gye for testing the carcinogenic properties of our oils; Dr. S. D. Elliott for typing our streptococcal strains; Dr. J. H. Schulman and Mr. J. E. Lovelock for help in preparing the soluble oils; Dr. C. Rimington, Dr. C. H. Andrewes and Dr. R. B. Bourdillon for much other help and advice; Brigadier L. T. Poole, director of pathology, A.M.S., and Colonel E. B. Marsh for allowing one of us to take part in this work, and to the managing directors and technical staff of Amoa Chemical Co. Ltd., A. Boake Roberts & Co. Ltd., Olinol Ltd., Stemco Ltd. and Technical Products Ltd. for supplying many of the oils and emulsifiers.

REFERENCES

Alexander, A. E. and Schulman, J. H. (1940) *Trans. Farad. Soc.* **36**, 960.
Bourdillon, R. B. and Lidwell, O. M. (1941) *Lancet*, **2**, 365.
— — and Thomas, J. C. (1941) *J. Hyg., Camb.* **41**, 197.
Hare, R. (1940) *Canad. publ. Hlth. J.* **31**, 539.
Rideal, E. K. and Schulman (1939) *Nature, Lond.* **144**, 100.
Schulman and Cockbain, E. G. (1940) *Trans. Farad. Soc.* **36**, 651.
Thomas, J. C. and van den Ende, M. (1941) *Brit. med. J.* **1**, 953.
Twort, C. C. and Lyth, R. (1935) *J. Hyg., Camb.* **35**, 125, 404.
— — and Twort, J. M. (1937) *Ibid*, **37**, 14.
— and Twort, J. M. (1938), *Ibid*, **38**, 255.
van den Ende, M., Edward, D. G. ff. and Lush, D. (1941) *Lancet*, **1**, 716.
— and Spooner, E. T. C. (1941) *Ibid*, p. 751.

HYPERCHROMIC ANÆMIA IN AN INFANT

RESPONSE TO LIVER EXTRACT

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LIVER extract is not often used in the treatment of anæmia in infancy and reports of success are few. This case is being reported because, when the chance of recovery seemed slight, a single dose of Anahæmin was followed by steady improvement and evidence of blood regeneration. It is regrettable that the records are incomplete, for the first blood-count was done 48 hours after the liver extract had been given.

Bachman [1] described a case of macrocytic hyperchromic anæmia in an infant aged nine months and reviewed 17 others from the literature, of which 7 including his own were treated and appeared to respond to liver extract. All 7 improved or recovered; 3 were not followed up but there was no immediate recurrence when it was discontinued in 3 of the other 4. Langmead described a case of pernicious anæmia in an infant aged thirteen months with severe hyperchromic anæmia, megalocytosis, icterus index 17·6 units, achlorhydria in response to histamine and a reticulocyte response of 19% to Campolon. Smallwood [3] refers to a case of subacute hæmolytic anæmia which recovered only when liver treatment was begun but did not relapse when it was discontinued; he considered that this was due to temporary exhaustion of anti-anæmic principle after a long period of hæmolysis and erythrogenesis. In no case described does the anæmia appear to have been more than a temporary effect; once the anæmic crisis has been tided over by liver or blood-transfusion maintenance treatment with liver has not been shown to be necessary. This is in contrast to the pernicious anæmia of adults, where deficiency is nearly always permanent and treatment has to be continued to prevent relapse.

CASE-HISTORY

A girl, aged 3 weeks. No history of anæmia in the family. No apparent deficiency in the mother's diet. This was her first child. Pregnancy normal; breech presentation with easy delivery, birth weight 7¼ lb. The child did not suck well and was breast-fed for only a week. She was then given half-cream Cow and Gate, seven feeds daily. She failed to make progress so this was changed to albumin water, 3 oz., alternating with diluted cow's milk, 3 oz. (2 parts milk to 3 parts water.) The stools were inclined to be loose and on one occasion contained blood, and there was occasional vomiting. On admission on May 16, 1941, the child was very ill and rather dehydrated. Temperature 104° F., pulse-rate 160, respirations 40–60. Signs of general bronchitis and a suggestion of bronchopneumonia. Spleen not palpable and liver not enlarged. Stools loose, numerous and occasionally dark. Bowels often open after feeding. Never any trace of jaundice. Urine normal. Diagnosis: bronchitis and possibly bronchopneumonia. Weight on May 26, 6 lb. 10 oz. Diet: from May 16 until June 6 she was given Frailac two or three hourly; from June 7 she was graded on to half-cream Cow and Gate three hourly; on June 18 additional Dextrimaltose was added to each feed, and this was continued until

1. Bachman, A. L. *Amer. J. Dis. Child.* 1936, **52**, 633.
2. Langmead, F. S. *Lancet*, 1937, **1**, 1048.
3. Smallwood, W. C. *Practitioner*, 1939, **142**, 453.

her discharge. During the first 24 hours 0·75 g. of sulphapyridine was given by the mouth. Since there was no response 3 c.cm. of azosulphamide (Prontosil Soluble) was given intramuscularly on May 17 and 0·75 g. of sulphanilamide daily until May 22. The daily dose was then halved until May 25 when it was stopped. There was considerable improvement and the temperature became normal on May 18 and remained so until the 27th. There was no gain in weight, however, and the stools on the 20th gave a strong reaction for occult blood. On the 27th the temperature rose again to 103° F. and an empyema was suspected, but radiography of the chest showed no evidence of lung disease. The stools then became more frequent and on May 30 a small amount of visible blood was passed. Vitamin K, 0·5 c.cm., was then given intramuscularly. During the next three days the temperature remained up and the general condition rapidly deteriorated. On June 2 obvious anæmia was apparent for the first time. The baby was then desperately ill with a temperature of 103° F. and an almost uncountable pulse. It was clearly no use giving iron by the mouth, and blood-transfusion was out of the question, so 1 c.cm. of anahæmin was given intramuscularly. Twenty-four hours after this injection there was an astonishing change, the whole clinical

BLOOD-COUNTS AFTER ANAHÆMIN, 1 C.CM., HAD BEEN GIVEN ON JUNE 2

—	June 4	June 21	July 3	July 17
Red cells ..	2,065,000	3,840,000	5,140,000	6,300,000
Hæmoglobin ..	54%	62%	84%	98%
Colour-index ..	1·24	0·82	0·82	0·83
White cells ..	15,600	17,000	24,000	
Polymorphs	6085 (39%)	5400 (32%)	6480 (27%)	
Eosinophils ..	465 (3%)	340 (2%)	960 (4%)	
Lymphocytes	8425 (54%)	9860 (58%)	14,400 (60%)	
Mononuclears	0	850 (5%)	2160 (9%)	
Myelocytes ..	465 (3%)	510 (3%)		
Myeloblasts ..	160 (1%)		A few immature polymorphs	
Normoblasts ..	1 per 200 white cells	20		
Megaloblasts ..	6			
Primary erythroblasts	5			

condition improved, dehydration and diarrhœa became steadily less, and the child began to take her feeds better and to gain weight for the first time. This progress continued without interruption until discharge. Within a week the stools had become almost normal in number. Her weight chart and blood-counts are shown in fig. 1. By the beginning of July she weighed 7½ lb., seemed healthy in every way and has remained well since without further treatment.

The blood-count findings are shown in the table. Price-Jones curves are in fig. 2. On June 12 blood films showed considerable megalocytosis and variation in size of red cells; megalocytes 12%, microcytes 1%; mean diameter 7·6 μ. On July 10 there were very few megalocytes (1%) and less variation in size of red cells; megalocytes 1%, microcytes 1%; mean diameter 7·3 μ. Reticulocytes: June 9, 22·5%; June 12, 17·8%; June 14, 17·5%; June 21, 5·6%; July 3, 4·4%; July 10, 1·9%. Fragility on July 11: hæmolysis begins at 0·38% saline and is complete at 0·26%.

Fractional test-meal on June 25: 30 c.cm. 3½% alcohol, no histamine given; 0·036 free hydrochloric acid present in sixth sample. Wassermann reaction, negative.

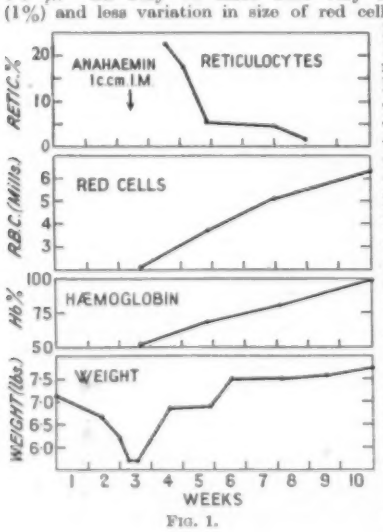

FIG. 1.

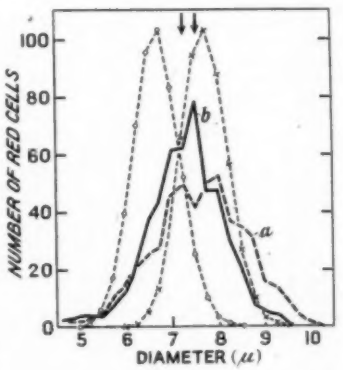

FIG. 2.

DISCUSSION

In this case the sudden onset of anæmia may have been due to hæmorrhage but was probably partly hæmolytic. From its response to treatment it appears to have been due essentially to a temporary lack of anti-anæmic principle or one of its precursers, for the diet was qualitatively unchanged for a fortnight before anahæmin was given until recovery was well advanced. The only additional treatment was a single injection of vitamin K four days before the anahæmin, and during this four days progress was rapidly downhill. The cause of the deficiency is difficult to explain. For the first three weeks of life the diet was certainly deficient in total calories, proteins, vitamins and iron, and as there was also a severe general infection with considerable intestinal disturbance absorption was also probably impaired. There was also some loss of blood from the intestinal tract. Such a combination in a child of this age is by no means rare but it causes hypochromic anæmia, and not hyperchromic anæmia as in this case. Two other possibilities remain—first, that the child started life with deficient stores of anti-anæmic principle; secondly, that treatment with sulphapyridine and sulphanilamide were contributory factors. It might also be argued that the recovery was not due to liver extract but was spontaneous, but the striking reticulocyte response is against this. The Price-Jones curves although they show some degree of megalocytosis, becoming less after treatment, are within normal limits for the age of the patient.

SUMMARY

A case of hyperchromic anæmia in an infant is described in which complete clinical and hæmatological recovery followed a single injection of anahæmin.

No qualitative alteration in the diet was made for a fortnight before anahæmin was given or until recovery was well advanced, and apart from a single previous injection of vitamin K, which did not seem to have any effect, no other vitamin preparations, iron or other treatment were given until the red cells were over 6,000,000 and the hæmoglobin was 98%.

I am indebted to Dr. C. H. Whittle for the blood-counts and Dr. W. Jacobson for the Price-Jones curves.

IN his annual report for ECCLES Dr. J. E. Spence states that 90 samples of milk were examined under the Sale of Food and Drugs Act of 1938, and 10 of them were found faulty; 49 samples of other foods were taken of which 2 were unsatisfactory; 4 samples of milk were taken from the same source and found to contain between 19·1 and 23·3% added water (appeals to the cow established bovine innocence and human fraud). Fines and costs totalling £22 2*s*. were imposed. What proportion of the profits of the swindle was refunded by the fine? Two-thirds of the work entailed by the Food and Drugs Acts is now absorbed by milk, and four-fifths of the sophistication detected is practised on milk, because the penalties imposed when a conviction is obtained are so trivial and the profits of the fraud so considerable that milk watering is a highly profitable business and the courts by the smallness of the fines they impose make it almost respectable. This is a particularly dangerous form of fraud, for many people are absolutely dependent on milk for their nutrition and may starve for no apparent reason if their milk is watered. It has been suggested that the fraud comes near to constructive murder and should be punished as such.

Medical Societies

BIOCHEMICAL SOCIETY

AT a meeting of this society on Nov. 29, with Prof. E. C. DODDS in the chair, a discussion on the

Mode of Action of Chemotherapeutic Agents

was opened by Dr. G. M. FINDLAY. Chemotherapeutic action, he said, may be classified as direct or indirect. Except in the case of parasites present in the intestinal canal it is essential that the chemotherapeutic drug should be absorbed into the body, that it should penetrate to the site where the parasites are acting, and that it should not be excreted or converted too rapidly into an inert form. Time must be allowed for chemotherapeutic action and in some cases for the conversion of the compound from an inactive into an active form. Once the drug and the parasite have been brought face to face three stages may be distinguished—adsorption, interference with metabolism, and death or such injury to the parasite that it is destroyed by the phagocytes of the host. An absorbed chemotherapeutic drug may prevent an essential food factor from being adsorbed or it may cause a breakdown in metabolism by combining with a specific substrate or by competing with an essential cell metabolite for an enzyme or coenzyme. One break in the chain of metabolic reactions may rapidly give rise to others. Specific immune serum and sulphapyridine do not compete for the same receptor group in the pneumococcus and may therefore enhance one another. Parasites may be killed in the body without the aid of phagocytes but usually when a parasite has been damaged it is destroyed by the normal defence mechanism of the host. Indirect action produces such changes in their environment that parasites can no longer grow. Physical changes may prevent growth, the temperature or the pH reaction may be altered, the formation of immune bodies may be stimulated, or the character of the cells may be altered, as in the treatment of gonococcal vulvovaginitis in children with œstrin preparations. The highly specific action of certain drugs and the no less specific reactions of certain closely allied parasites can be explained by postulating that after adsorption of the compound at the parasite/solution interface the nature of the interference with the metabolism of the parasite depends on what groupings in the molecule of the compound come within the influence of other acceptor groups in the parasite: there is thus a multipoint action.

Prof. ALEXANDER FLEMING said that in 1929 he applied the name penicillin to an antibacterial substance of unknown constitution elaborated by *Penicillium notatum*. It is formed in ordinary bacteriological media or in a modified Czapek-Dox medium. The action is mainly bacteriostatic and shows a high degree of specificity. Pyogenic cocci, clostridia and some other bacteria are sensitive, while the coli-typhoid, hæmophilic chromogenic bacilli and others are insensitive. Pathogenic gram-negative cocci (gonococcus, meningococcus and *Micrococcus catarrhalis*) are sensitive while saprophytic varieties—e.g., *M. flavus*—are insensitive, thus differing from the sulphonamides. The action of penicillin is not interfered with by substances that inhibit sulphonamides—bacteria, bacterial extracts, pus fluids, tissue autolysates, peptones and *p*-aminobenzoic acid. Penicillin is non-toxic to leucocytes and animals but in low dilutions it affects the morphology of bacteria and interferes with division. Penicillin has been extracted in an impure form by Florey and his associates, and this extract is in blood many times more powerful as a bacteriostatic agent than the most powerful of the sulphonamides. In vivo, likewise, it has been shown at Oxford to have remarkable curative effects in experimental infections of animals and pyogenic infections in man. Since penicillin is apparently of a different constitution from the sulphonamides the isolation and synthesis of the pure active principle will open up a new chemotherapeutic field.

Prof. WARRINGTON YORKE, F.R.S., described the action of the aromatic diamides which were evolved by Ewins, after it had been shown that Synthalin acted on trypanosomes not by reducing the sugar but by direct toxic action. Some aromatic diamidines exhibited a remarkable trypanocidal activity. The most active were 4 : 4′-diamidinostilbene ; 4 : 4′-diamidinodiphenoxypropane ; and 4 : 4′-diamidinodiphenoxypentane. Cases of kala-azar have now been successfully treated with diamidinostilbene — Indians, children in the Mediterranean area, and patients with the Sudanese variety which was resistant to antimony. Babesia infections in dogs were cured by the stilbene and propane derivatives. Diamidinostilbene is active against *Trypanosoma congolense*, but replacing the hydrogen atoms of the ethylene group by methyl groups greatly increases the activity against this infection. The various diamidines, therefore, exhibit a considerable specificity of action. Study of the phenomenon of drug-resistance may throw light on the mode of action of drugs. Drug-resistance in trypanosomiasis has been extensively studied, but little is known of the phenomenon in other protozoal infections. Professor Yorke and his colleagues have recently demonstrated drug-resistance in *Babesia canis* infections of dogs and in *Plasmodium knowlesi* infections of *Macacus rhesus*.

Dr. FRANK HAWKING, discussing trypanocidal substances, said that from the phenomenon of drug-resistance four kinds of receptors on the trypanosome are recognised—for arsenicals, acriflavine &c.; for parafuchsin ; for diamidine compounds ; and for Bayer 205. Trypanocidal action comprises fixation of the drug, secondary chemical reactions inside the cell, and death. Only about the first process is much known ; it occurs quickly in a few minutes and is reversible. With arsenical compounds, fixation apparently depends on the trivalent arsenic atom linked to a benzene ring. Most side-chains prevent fixation, but certain ones (–NH_2, –OH) prevent it for the animal cells but not for normal trypanosomes ; it is compounds with these side-chains which have chemotherapeutic value. The receptors of resistant trypanosomes are modified so that they resemble those of the animal cells, and thereby therapeutic action is lost. Over a wide range, the amount of drug fixed is proportional to the concentration in the surrounding fluid ; in the case of acriflavine the partition ratio—the concentration inside the trypanosome divided by the concentration outside—is 8000 for normal trypanosomes, 60 for resistant trypanosomes. Some fluorescent compounds—e.g. acriflavine and diamidinostilbene —are concentrated in the blepharoblast and cytoplasmic granules of the trypanosome. With Bayer 205 the mode of action is quite different. It is not directly trypanocidal in vitro, and, although it does seem to form some kind of direct combination with the trypanosomes, the amount which is taken up is quite small. There is some evidence that it has an opsonin-like action.

Sir HENRY DALE, P.R.S., emphasised the importance of having a theory of chemotherapeutic action. It was one of Paul Ehrlich's great contributions to the subject to produce a theory which, though it would probably not survive unmodified, gave a tremendous stimulus to research. His speculations sometimes appeared more plausible than convincing ; but in many cases they eventually proved to be well founded. An example was Ehrlich's explanation of the action of certain dyes on infection by trypanosomes as due to injury of the reproductive power of the trypanosomes, without affecting their other vital functions. At the time this suggestion seemed artificial and unconvincing, but when Dobell and Laidlaw found a method for growing *Entamœba histolytica* in permanent culture in vitro, it could be demonstrated that the action of emetine was just of this type. Another factor of chemotherapeutic activity which he believed to be important was the "factor of persistence." Effective chemotherapy is usually, if not always, a war of attrition rather than a Blitzkrieg. This seems to be why a quinquivalent arsenical on the one hand, or an arseno-compound on the other, is a better chemotherapeutic agent than the arsenoxide produced by reduction from the one or by oxidation from the other, although the arsenoxide is recognised as the directly parasiticidal agent. In the same way, sulphaguanidine seems to owe its effectiveness in bacterial dysentery to its poor solubility, enabling it to remain in solid form in the intestinal contents and to keep up a steady, low concentration in contact with the infected mucous membrane. Aromatic diamidines, the brilliant promise of which has been made clear by the results

which Professor Yorke has reported, may similarly owe part of their superiority to their limited solubility. He suggested as problems whose solution might greatly accelerate advance in parts of the field of chemotherapy the discovery of a method of keeping trypanosomes alive and reproductive indefinitely in artificial culture, and of treating a strain of trypanosomes which had acquired a drug-resistance so as to restore its normal susceptibility.

Mr. D. D. WOODS, Ph.D., spoke of the interference of antibacterial agents and essential metabolites. This interference may be due to the formation of a compound between the antibacterial agent and the essential metabolite, as between mercury salts and -SH compounds, or to inhibition of an enzyme reaction involved in the synthesis or utilisation of an essential metabolite. An example of this is the competitive inhibition by sulphanilamide of an enzyme reaction involved in the further utilisation of *p*-aminobenzoic acid, this inhibition occurring by virtue of the chemical relationship of sulphanilamide and *p*-aminobenzoic acid. The latter has been isolated from natural sources and is a growth factor for *Clostridium acetobutyricum* and higher organisms. Working on this hypothesis, the following substances, all chemically related to a known essential metabolite (shown in parentheses), have been found to have some antibacterial activity—pyridine-3-sulphonic acid and amide (nicotinic acid and amide); aminosulphonic acids (analogous aminocarboxylic acid); sulphonic acid analogue of pantothenic acid (pantothenic acid); indole-3-acrylic acid (tryptophane); barbituric acid (uracil).

Mr. H. MCILWAIN, Ph.D., said that an organism which is deprived of the use of enzymes or metabolites by various types of interference is nutritionally more exacting than in its normal state. *Bacterium coli* and *Streptococcus hæmolyticus*, inhibited by acriflavine components, require for further growth two types of material not normally required. Type 1 is best replaced by nucleotides, type 2 by a concentrate of amino-acids, but partly by phenylalanine. In the presence of type 2 compounds, but not without, artificial hydrogen carriers are further active against inhibition of *Bact. coli*. Type 1 compounds form complex salts with acriflavine components. The inhibitors probably inactivate enzyme systems of which type 1 compounds are essential parts, of which type 2 compounds are substrates or products, and of which some can be replaced by the hydrogen carriers.

Mr. W. H. LINNELL, Ph.D., described the relationship between chemical constitution and bactericidal action in certain amino acridines. Among the isomeric diaminoacridines, 1-amino group causes complete loss of bactericidal activity and reduces toxicity; a 2-amino group increases activity and this is further enhanced by another amino group in the 2-, 3-, 4- (in the other ring), or 5-positions, accompanied by increased toxicity in the case of a second 2- substituent. When two 3-amino groups (= 3 : 7) are present, activity is moderate, but the 3 : 8 diaminoacridine (= 2 : 7) is as active as proflavine but less toxic. A 4-amino substituent confers small activity while position 5 is highly active but probably leads to increased toxicity. Albert has shown that similar differences in activity exist among the five isomeric monoamino acridines, their activity paralleling their strength as bases and their partition coefficients between oil and water. The corresponding acridones are inactive, as are certain amino derivatives of 5 : 10-dihydroacridine and of iminodihydroacridine, suggesting that the intact acridine molecule is necessary.

Mr. L. G. GOODWIN, B.Sc., said that the uncertain action of antimony in protozoal diseases, of which the resistance of Sudanese kala-azar to antimony is an example, is an added difficulty in investigating its mode of action. The active form of antimony may be the stibinoxide grouping, but while this is probable in trypanosome and schistosome injections it is unlikely in leishmaniasis where quinquivalent compounds are the most effective and massive dose therapy is successful. Excretion of antimony after doses of the quinquivalent compounds or of stibophen is much more rapid than with tartar emetic. There is some indirect evidence that the rapidly excreted fraction of the drug passes through the body unchanged. Both direct toxic action on parasites and stimulation of the hosts' defence mechanisms are produced by antimonials. Increased phagocytosis may be of primary importance in leishmaniasis, though histological work on the spleens of infected hamsters injected with a quinquivalent antimony compound suggests some degree of direct action.

Mr. E. CHAIN, Ph.D., described the chemical and physical properties of penicillin in relation to its bacteriostatic action. It is a strong acid with two or a multiple of two acid groups. A purified barium salt gives a carbon content of 55% and an H content of 6·3%; only C, H and O are present in the molecule. Methoxyl groups cannot be detected but two hydroxyl groups are present. The dried Ba salt of penicillin keeps indefinitely and in watery solution is most stable between pH 5 and 7. With heavy metals, except ferric iron, it forms water-soluble salts. The antibacterial action is lost by oxidation with hydrogen peroxide and potassium permanganate.

Mr. E. P. ABRAHAM, Ph.D., said that the instability of penicillin necessitated three methods of purification dependent on distribution between solvents, adsorption and reduction. The crude barium salt obtained from an amyl-acetate extract of the medium has an activity of 15-25 units per mg. Distribution between water and ether at pH 2 and pH 6, adsorption of impurities by charcoal, and chromatographic analysis on alumina yield a light yellow barium salt with an activity of about 150 units per mg. On reduction of this material in neutral solution with aluminium-mercury couple the remaining pigment is adsorbed by alumina. The white barium salt obtained from the supernatant has an activity of 240 units per mg. It completely inhibits staphylococcus in a dilution of 1 in 5,000,000, and partially in a dilution of 1 in 16,000,000.

Mr. F. R. BRADBURY, Ph.D., has studied the behaviour of sulphanilamide, *p*-aminobenzoic acid and chemically related compounds, aniline and sodium benzenesulphonate, at the surface of *Bact. coli* by electrokinetic methods. The shapes of the curves relating variation of mobility with time of contact for sulphanilamide and *p*-aminobenzoic acid are quite different from those of the curves for aniline and sodium benzenesulphonate. The curves for sulphanilamide and *p*-aminobenzoic acid are similar, suggesting that the two compounds behave in a like manner at the bacterial surface.

Prof. A. ST. G. HUGGETT said that dyes such as chlorazol sky blue FPS (Chicago blue) and chlorazol-fast pink BKS are excellent anticoagulants. Structurally they resemble afridol violet from which Bayer 205 is derived; they have a trypanocidal action while Bayer 205 has an anticoagulant action. The dyes act at two points in the clotting mechanism, as antikinase and as antithrombin. Their antienzyme action in blood-clotting may have an analogy to their mechanism as trypanocidal agents.

SOCIETY OF M.O.H.'s

AT a meeting of the Fever Hospital Medical Service Group of this society on Nov. 14, a discussion on

Fever Hospitals and Pathological Services in Post-war Planning

was opened by Dr. H. STANLEY BANKS (L.C.C.) who thought that fever hospitals as well as general hospitals should be regionalised. Modern fever-hospital work requires the equipment of a general hospital—e.g., first-class laboratory service, X-ray and physiotherapy departments and operating-theatre. Wards for the general sick can be a success in fever hospitals. In future, fever units and general units could be combined under one administration. Over 80% of fever hospitals outside London have less than 50 beds, and about 55% less than 20 beds. Many of these small hospitals should be closed or linked up with others. It is important to determine the best method of administration of a regional authority. The usual local-authority method by which a chief medical officer appointed by the authority is responsible for both the management and medical direction inevitably leads to a centralised bureaucracy. This may be effective for a time by improving the backward units but soon produces atrophy at the periphery, and medical progress depends on initiative at the periphery as well as support from the

centre. There should be a proper balance of power and responsibility between the two, which might be achieved by leaving medical direction to local and regional medical committees of senior staff. The regional committee could make itself responsible for conveying medical advice and direction to the authority, by the use of a whole-time staff if necessary. Some such scheme of decentralisation of medical direction is essential to preserve the vitality of a hospital service.

Dr. L. J. M. LAURENT (L.C.C.) suggested that voluntary hospitals, owing to increasing grants from the state, are bound to come under state control. They enjoy a semi-independence which helps medical progress but does not further mutual support. Municipal hospitals under the management of local authorities have become as efficient as voluntary hospitals but labour under a highly centralised administration. Any future scheme of hospital planning should avoid the disadvantages of both and the perpetuation of a dual system of hospitals. The creation of a regional authority to control both kinds as equal partners would be a step in the right direction. Modern fever hospitals approximate so much to general hospitals that they should come under the same authority. Small fever hospitals should be replaced by larger units serving adjacent areas. The large fever hospitals as a result of the war are now treating cases of tuberculosis, chronic sick and senile patients, pneumonias, skin disorders and casualties, besides cases of notifiable disease. After the war a diminution of infectious diseases is to be expected, and the beds left vacant could continue to be used for these cases. To meet the needs of medical education fever hospitals should be allowed to receive patients from larger areas than at present. An infectious-diseases block attached to a general hospital would benefit both sections.

Dr. A. A. CUNNINGHAM (L.C.C.) thought that a good deal of the open ward accommodation in large fever hospitals could be made available for general medical and surgical cases. This practice was begun in London before the war. The head of a hospital should be a medical superintendent, not a layman, but there should be well-paid posts for good clinicians. Teaching hospitals should have a voice in the appointment of those who train students in infectious diseases.

Dr. J. E. MCCARTNEY (L.C.C.) said that a pathological service must provide for all classes, not only for hospitals but also for medical practitioners and public-health work. As the laboratory must be near the patient, the technical work should be decentralised as much as possible, but supplies, equipment, and conditions of service should be standardised as far as possible. The country would be divided into regions, and the regions into groups each under a pathologist working in the main laboratory of the group, which would be similar to a L.C.C. group laboratory. According to need there would be sub-group laboratories staffed by assistant pathologists, or, where work was insufficient, a technician would be employed. No separate public-health laboratories would be provided but the medical officer of health would be in touch with the group pathologist in his area who would organise all pathological work; a mobile laboratory staffed by personnel from less busy parts of the region would be sent to any epidemic. The work of the region would be coördinated by a regional pathologist who should not be a whole-time administrator but attached to or in charge of a laboratory, and his work would be mainly technical. All regions would be coördinated by a director of pathological services. Technical and administrative sides would be run by a committee consisting of regional pathologists and administrative staff—e.g., for personnel, finance, buildings. London would be organised on similar lines to suit its requirements. There should be full coöperation with university teaching departments, many of which would be the main regional laboratories. Research would also be coördinated. The organisation of supplies would be on the lines of the L.C.C. centralised system which supplies not only its own laboratories but also the Ministry of Health sector laboratories in London. The L.C.C. pathological service, now functioning as a regional laboratory service, might become the basis of a national one.

Dr. ROBERT CRUICKSHANK (L.C.C.) thought that the association of laboratory services with infectious diseases hospitals needs to be developed, for laboratory help is essential in the diagnosis, treatment and control of most infectious diseases. Besides, a laboratory on the spot helps to maintain the standard of work in the hospital and encourages coördinated investigation and research. To do this the laboratory staff must not be overburdened with routine work, and the intellectual calibre of the personnel should be high. In the past, the clinical pathologist has often been regarded as inferior to his colleagues in the teaching and research departments, but with full-time adequately paid posts and encouragement of research, clinical pathology should be able to attract the best brains. The laboratory doing the bacteriological work of the fever hospital should also do the public-health bacteriology of the surrounding area. Such an arrangement is specially desirable in London where the liaison between the borough M.O.H. and the local isolation hospital is not as close as it might be. Field epidemiology, at present rather neglected, would also be encouraged by a system of regional laboratories such as the L.C.C. had established in London.

Dr. R. A. O'BRIEN (Beckenham) was of the opinion that no scheme for the future of the pathological services need look further than the L.C.C. group system for a plan on which to build.

Dr. E. C. BENN (Leeds) agreed that hospital regionalisation is inevitable. Each part of the country has its own problems and one of the major obstacles to be overcome is local prejudice. Full pathological services should be available to every hospital, but small units attached to small hospitals are to be avoided in the interests of economy.

Dr. A. G. TROUP (Willesden) spoke of general hospitals he has visited in Austria and Czechoslovakia with successful fever sections. The admission of ordinary medical and surgical cases to isolation hospitals is safe from the cross-infection point of view and Dr. Troup described his experience of this at the Willesden Isolation Hospital. Fever hospitals must be considered in any scheme in order that all available beds can be used for the maximum benefit of the community. In London the sector system might form the basis on which to found the post-war scheme. The better and more modern fever hospitals should be enlarged and the others used for a different purpose or closed. The Local Government Act of 1929 and the Public Health Act of 1936 suggested this but no progress has been made owing to the absence of compulsory powers.

Dr. FRED GRUNDY (Luton) preferred to substitute for Dr. McCartney's "mobility of personnel" a flexibility of personnel, for pathologists should remain long enough in a laboratory to get to know the local doctors. No isolation hospital should have less than 200 beds, so that each should carry at least one resident medical officer. Local government areas should be amalgamated under existing legislation or rearranged. But the future of the treatment of infectious diseases will be found in the linkage of cubicle blocks and special wards with general hospitals, or, possibly, with children's hospitals. Planning should take into account the need for improvement in the training of nurses.

Dr. D. V. HAGUE (Yeovil rural district) thought that separate infectious disease hospitals are unnecessary. Greater efficiency would be found in a fever unit of a large general hospital, for there would be greater opportunities for consultation and treatment, better education of medical students in fevers, and all nurses would get fever and general training. With competent fever-trained staff the disadvantages are negligible. Some of the present isolation-hospital buildings might be used as children's hospitals where the school M.O. might act in a clinical capacity, to the benefit of the patients and the school M.O. himself, who has far too little experience of sick children. If regional control is adopted, there should be some local autonomy, and mechanism for the regular expression of opinion on local conditions to the regional board.

Dr. WILLIAM GUNN (L.C.C.) did not think that epidemic diseases will subside much after the war. Under a statutory organisation the smaller voluntary hospitals would no longer be run as nursing-homes for the benefit of the consultants. The best unit in a hospital system would be a large hospital centre with a minimum of 1000 beds and general and special depart-

ments of all kinds. A workable scheme on these lines, the "Walton plan," has been worked out.

Dr. C. A. McPHERSON (Chertsey, and Walton and Weybridge urban district) said that the lack of a pathological service is one of the chief disadvantages of a small isolation hospital. The provision of this by the E.M.S. has been of the greatest value. X-ray facilities are also needed perhaps as mobile regional units. In some provinces in France general hospitals successfully provide treatment for tuberculosis and infectious disease, and have health departments which administer the other public-health services.

Dr. R. W. TANNAHILL (Waltham joint hospital board) regarded 250,000 as a population for which it is economic to provide an infectious-diseases hospital, and where necessary districts should be combined. Such a combined authority could support a full-time resident medical officer. The infectious-diseases hospital should be able to admit all infectious diseases in the area, whether notifiable or not, and this is possible only in the larger units. Many small hospitals admit only scarlet fever and diphtheria. Infectious wards in general hospitals have been in operation in other parts of the world for many years. It is an advantage to have the services of the consultant staff and of the pathological department available for infectious cases, and the resident medical and nursing staffs learn much from a spell of duty in the infectious wards. Existing fever hospitals could be attached to a large general hospital for these services.

Reviews of Books

Integration of the Personality

C. G. JUNG. London: Kegan Paul, Trench, Trubner and Co. Pp. 313. 15*s*.

Dr. Jung is well read in esoteric subjects, but his learning seems too heavy for him in this work. The book is overloaded with quotations and references, and unless its readers have a liking for statements in which abstruse semantics are blended with a subfusc mysticism they will not penetrate Dr. Jung's meaning. The six lectures composing the book are concerned with individuation, by which is meant "the psychological process that makes of a human being an individual." The earliest section deals with the animus and the anima, familiar in Dr. Jung's previous writings as primordial figures, archetypes located in the collective unconscious. A case is described, with an illuminating account of how Dr. Jung deals with the symbolic material in patients' drawings; and in a later chapter the dreams of a patient are interpreted on rather gnostic lines. The psychology of alchemy is examined at length in chapter 5, and the final chapter contains some opinions about the modern need for a leader who has decided to follow the law "that comes from within. . . . He has been called away from the all-powerful, all-oppressing psychic life that is his own and his people's affliction. . . . With the very decision to put his own way above all other ways he has already in large part fulfilled his liberating vocation. He has cancelled the validity of all other ways for himself —he has placed his law above all conventions." Dr. Jung delivered the lecture in which this passage occurs in 1932, but he can hardly have foreseen how canonical this bit of Führer-doctrine would soon become; it was, however, well placed after the chapter on alchemy, since the futile arm of alchemy was to transmute dross.

It Passed Too Quickly

Air Vice-Marshal Sir DAVID MUNRO, M.A., LL.D. St. And., M.B. Edin. London: Routledge. Pp. 304. 15*s*.

THIS work, suffused with personality, is the story of a small boy in an Eton suit arriving at St. Andrews University in a cab from Leuchars at the age of fourteen as an undergrad, and returning nearly fifty years later to the same station with an escort of planes, to be drawn from thence by students in triumph in an open carriage after his election as rector of his old university. What happened to him in the interval is displayed with staccato zest. He left St. Andrews with his M.A. degree to finish his medical career in Edinburgh, working under Caird, R. J. A. Berry, Schäfer, Greenfield, Littlejohn, Byrom Bramwell—what a galaxy. Then came entry into the I.M.S. at the time of the South African War, and work at Netley under Sir Almroth Wright and Leishman. Then India, to one frontier post after another in quick succession, a period which allows of rapid little vignettes of officers, tribesmen, patients, hospitals, marches with the Guides, the Delhi Durbar and Curzon, Kitchener, pig-sticking and big-game hunting. After three or four years on the military side came marriage and a transfer to the "civil" and life in Calcutta The I.M.S. was then in its heyday: "We were Harley Street and the universities in one. Museums, jails, botanical gardens, marine surveyships, even the Mint had I.M.S. officers, and we held all the teaching appointments in the medical schools." The author had his fair share of these responsibilities; he thought he was in civil employ for life.

And then unexpectedly came the war of 1914–18, and recall to service again: home to England, hospital ships in the channel for Indian wounded, idle days in the Isle of Wight, a sudden order East again, Basra, "Mespot"—the now almost forgotten story of the medical muddle—Gertrude Bell, Sir William Willcox, Sir George McMunn, Sir Matthew Fell. Again change: Egypt, Allenby, lines of communication, the great advance, the armistice. Then home again to England, and transfer from the I.M.S. to the newly formed Air Force Medical Service of which a few years later he was to become director-general. After that, secretary to the Industrial Health Research Board, where the tale ends. Among the great variety of interest, the many wise and witty comments on life in general, on medical education, and on sport, especially hunting of which the author is a devotee, the reader must browse for himself. A full life is recorded here, a stimulus to all who read it.

Contraception

(5th ed.) MARIE CARMICHAEL STOPES, D.Sc. Lond. London: Putnam and Co. Pp. 459. 15*s*.

THIS book reflects the personal views and character of a pioneer. It contains information which must have taken many years to collect, but is not an unbiased statement of the present state of contraceptive technique. Why Dr. Stopes elected to end her history of the birth control movement with a party at the Ritz celebrating the tenth birthday of the original clinic is obscure; a lot has happened since 1931. The birth of Dr. Abraham Stone's admirable *Journal of Contraception* (now *Human Fertility*), the work of the Birth Control Investigation Committee and the Family Planning Association and its medical subcommittee are unnoticed; the references to modern work on spermicides are sketchy; and no mention is made of Dr. J. R. Baker's recent work on them, of Dr. H. Carleton's study of local effects of various chemicals, or of the clinical and laboratory work done in America.

Essentials of Dermatology

NORMAN TOBIAS, M.D., senior instructor in dermatology, St. Louis University. London: J. B. Lippincott Company. Pp. 497. 28*s*.

MORE useful information is crammed into this small book than there is in textbooks many times its size—hardly any redundant matter and plenty of good photographs which may account for the rather high price. Here and there the brevity of the discussion leads to some confusion, as when under lupus erythematosus it is stated that gold is a useful drug without mentioning what type of gold should be used or how it should be administered. Similarly under secondary exfoliative dermatitis, except for the illustration, no mention is made of dermatitis due to N.A.B. or gold salts, surely two of the most important causes of this disease. An important omission is that streptococcal tonsillitis may be and often is the cause of erythema scarlatiniforme. Not all agree that granuloma annulare responds to treatment with Fowler's solution or that 606 is better than 914 in the treatment of syphilis. Dermatologists in this country are satisfied that in the treatment of ringworm of the scalp X-ray epilation is the treatment of choice and not, as Dr. Tobias suggests, to be reserved for intractable cases. The chapter on eczema, is one of the best expositions on the subject to date, but is it for the benefit of the patient or doctor that subjects of intractable atopic eczema are to be advised to move to another part of the country?

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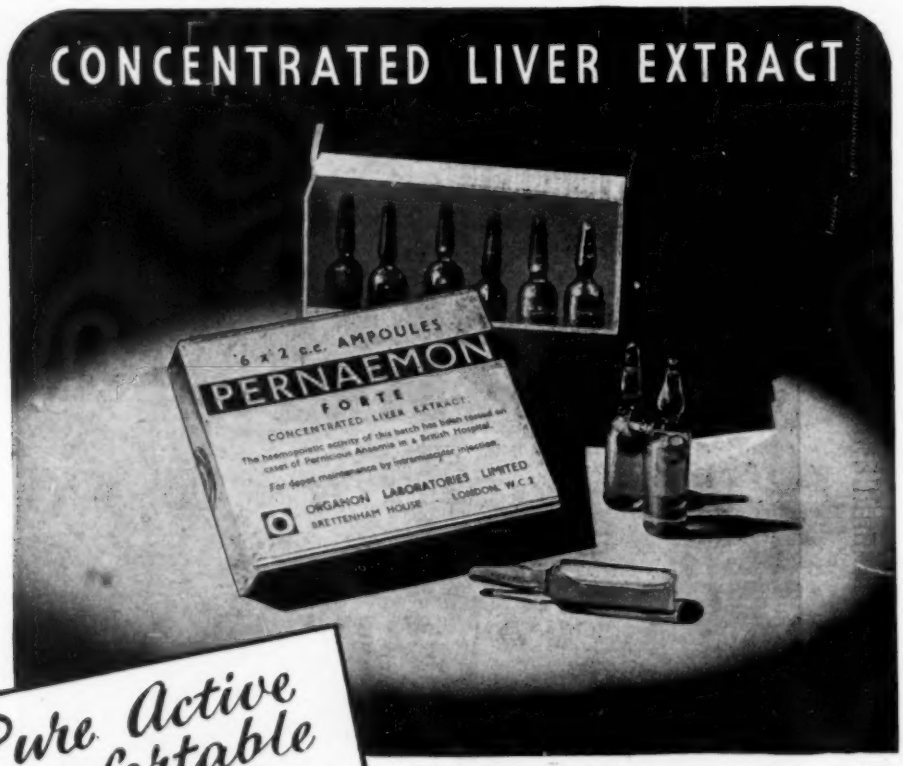
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THE LANCET

LONDON: SATURDAY, DECEMBER 20, 1941

COLLECTION OF INVASION CASUALTIES

AUTHORITIES have been urged to coöperate with each other so that the combined machine for the collection of casualties shall work as smoothly as possible if we are invaded. There are three main schemes in operation, and each of them possesses aid-posts of different capacities, all of which, together with all the ambulances, are to be available for both civilian and military casualties. An attempt is now being made to weld these services into one and to arrange their aid-posts on a network plan, which shall allow the least specialised to be ranged around those of more complexity, and these again around the general hospitals.

The first or lowest class of aid-post may be either a detachment aid-post of the R.A.M.C. (consisting of one or two first-aid men and a small satchel of dressings), a civilian first-aid point, a Home Guard casualty collecting post, or a wholly unofficial private house or factory which may chance to have a certain amount of equipment. Walking casualties are expected to find their way to such points as these, and Home Guard stretcher bearers will also be expected to carry their charges there, but civilian stretcher cases are to be taken by ambulance direct from the place at which they are injured to some post in the second or third class. The posts of this first class will not have a doctor in regular attendance. Between the first and second class of posts there comes an intermediate class which includes advanced dressing stations of the R.A.M.C., regimental aid-posts of the Home Guard and up-graded points of the civil services. The precise function of these units is likely to vary with the needs of the moment. Their equipment is simple and their staff extremely small. The second main class of aid-post comprises main dressing stations of the R.A.M.C., first-aid posts (mobile or fixed) of the civil services, and some of the smaller hospitals. These are intended for the treatment and temporary accommodation of cases which do not need specialist surgical treatment but are yet so severely injured as to need inpatient care or to be sent home to bed by ambulance. These posts will also deal with walking cases from their own vicinity or cases brought in from a distance without stopping at any lesser post. The third and last form of medical aid is to be given at casualty clearing posts of the R.A.M.C. or at fully equipped military or civilian hospitals. In so far as these may prove to be too near to the battle zone for reasonable safety, their patients will be cleared as soon as possible after operation by Green Line ambulance or hospital train to suitable refuges in remoter areas.

These three classes include most but not all of the recognised posts. The normal course of a stretcher case from the time of wounding until he reaches hospital will vary according to whether he follows the R.A.M.C., the Home Guard or the civilian route of evacuation. The fact that he follows any particular route does not imply that he is either a soldier or a civilian; each may follow any of three routes.

The wounded soldier or the wounded civilian in a military area will be picked up on the battlefield by regimental stretcher bearers and carried to the nearest post of class I. In the case of the Army this will usually be an advanced dressing station or a regimental aid-post. Here he will be looked after until it is possible to load him on an ambulance. The ambulance will convey him, according to his needs, to a post of class 2, direct to a hospital, or perhaps an ambulance train for further transport away from the scene of action. Having received the best attention possible at the second class post he will if necessary be sent on to hospital. This will either be some special hospital—say for fractures or head cases—or a general hospital.

2. The Home Guard stretcher case will be picked up on the battlefield by H.G. stretcher bearers and carried to any post of class 1. If this is a H.G. casualty collecting post, the Home Guard must then establish contact with the civilian control centre and look after the wounded until ambulances arrive to take them away. Home Guard responsibility will then cease and casualties will follow the civilian route of evacuation.

3. The wounded civilian will get into touch with the air-raid warden or the police who will in turn get into touch with the control centre. This will send out (if possible) both a first-aid party and an ambulance or ambulances. The wounded will then be taken to a post of the second class, to one of the intermediate class, or to a hospital according to the needs of the case as assessed by the first-aid party. If a number of civilian casualties occur at one spot the control centre may send out a mobile first-aid post with orders to open up in some convenient building and deal with the cases on the spot.

These are the main types of post and the main lines of evacuation at present planned, but their harmonious coördination is hampered by several factors. Many people suppose that it will not be possible to put ambulances on the road in invaded areas for periods which may be as long as a week. Some posts—for example the up-graded points now being established—are required to have accommodation and rations for a week while others, notably the Home Guard posts and ordinary civilian points, are established on the understanding that ambulances will always be available and that they will not be called on to retain patients. Until it is generally agreed whether it is wise to depend on immediate clearance by ambulance no satisfactory coöperation is possible. If it should prove that ambulances are delayed for periods ranging from 24 hours to a week all posts of the first class would have to provide hasty and probably unsatisfactory accommodation, dressings and food. In a settled and well-populated country it ought not to be necessary to depend on last minute improvisations to this extent. A second obstacle to coöperation is the present distribution of medical man-power. As at present arranged, the civilian services claim to have the first call on all medical men, including those of the Home Guard but not those of the R.A.M.C., even if temporarily idle. This claim includes the right to keep medical officers at duty points—such as a garage housing a mobile ambulance—even if there is no work for them to do and even if, as Home Guard or civilian doctors, there may be great need for them elsewhere. So long as one Service makes a claim of this sort there is bound to be a serious wastage of medical man-power and this wastage we can ill afford. What is needed is some form of clearing house for medical men under the control of a commission representing all three Services, which shall get to work before the emergency comes and continue to operate in time of invasion. A third difficulty arises because there is no agreement about decentralisation and dispersal of

medical equipment and first-aid workers. It must first be agreed, of course, whether circumstances will or will not compel the dispersal of casualties and whether concentration of casualties in defended towns and other danger spots should be permitted. There are bound to be differences of opinion and no official decision will command universal approval, but these points should at least be discussed and a line of action should be agreed on by the heads of all three Services. Otherwise the Services themselves can never coöperate in a way to command the confidence of the public.

THE MAN IN THE IRON LUNG

THE Drinker type of respirator, so beloved of public fancy, has only a limited use in this country where widespread epidemics of anterior poliomyelitis are rare. There are patients, however, whose lives depend on its use, and their management calls for highly skilled medical supervision and nursing. In America such cases are more common. SCHMITT and SELDON,[1] of the Mayo Clinic, discussing practical points in management, say that negative pressure should not exceed 20 cm. of water, and that positive pressure is needed only when the patient is being taught to cough. Negative pressure should be increased to 25–30 cm. of water for a few minutes every four hours, to keep the costochondral joints from getting stiff. The respiratory rate is kept at 18–20 a minute, and rate and pressure should be the lowest possible to keep the patient comfortable and of a good colour. His head is kept lower than his feet, making an angle of some 20° with the horizontal, and mucus and secretion draining into the throat as a result of this posture are aspirated by gentle suction. Portholes in the respirator make it possible for ordinary nursing care to be given without removing the patient, but for any complicated measure it may be necessary to take him out. If the respiratory muscles are not completely paralysed he may be able to breathe without mechanical aid for a few minutes; otherwise if the machine is opened respiration must be maintained in some other way, and SCHMITT and SELDON have devised a simple technique of giving oxygen through a face mask and bag. When the machine is stopped, or open, the mask is applied, and the bag is squeezed rhythmically 18–20 times per minute. In this way the patient is able to remain out of the machine long enough for essential nursing and medical attention to be carried out thoroughly.

Between 400 and 500 patients suffering from poliomyelitis were treated in respirators in the United States last year. Two-thirds of them had bulbar paralysis with pharyngeal paralysis, and two-thirds of these died. WILSON,[2] SCHMITT and SELDON agree with the English findings that better results may be obtained in bulbar paralysis from measures directed to maintaining the patency of the air-passages than from treatment in the respirator. WILSON mentions the use of tracheotomy in selected cases. He says that the respirator is clearly indicated only when the respiratory difficulty is due to intercostal or diaphragmatic paralysis and that a third of the 400–500 cases fell into that category, of which less than 20% died. Although it is sometimes questioned whether the use of the respirator is justified for patients who, if they survive, may be so severely paralysed that their lives will be of little value to themselves or others WILSON points out that at the time when the use of the respirator must be begun it is impossible to estimate the future degree of paralysis and thus every patient should be given his chance of survival and recovery. He emphasises the importance of instituting treatment in the respirator early if there is evidence of weakness of the intercostal muscles and diaphragm, in the belief that the weakened muscles can be rested and protected by treatment in the respirator and so possibly less strain put on the damaged anterior-horn cells. He suggests that the patient should be examined for weakness of the neck and shoulder muscles, which is invariably associated with intercostal and diaphragmatic paralysis, and he believes that the respirator should be used long before cyanosis, dyspnœa and air-hunger appear. SCHMITT and SELDON give as the chief indications for placing the patient in the respirator: restlessness, monosyllabic speech, increased respiratory rate and a vital capacity of less than 250 c.cm. of air.

In America it is difficult to make the ideal early decision for treatment in the respirator because there are not enough machines, and there it is hoped that some cheap, readily portable and effective respirator, perhaps of the cuirass type, will be developed. The position is different in Britain where Lord NUFFIELD has ensured that respirators are available in almost every hospital.

1. Schmitt, G. F. and Seldon, T. H. *Proc. Mayo Clin.* 1941, **16**, 453.
2. Wilson, J. L. *J. Amer. med. Ass.* 1941, **117**, 278.

WHERE THE WARD ROUND RUBS

PATIENTS probably cared little enough for the attentions of medical students even before Martial, in the first century A.D., wrote:

> Languid I called on you, Symmachus, quickly you heard me,
> Quickly you came with a hundred raw students behind.
> They earnestly pawed me all over with hands like the arctic:
> I was free from the fever before, but now—by Apollo!
> I'm burning.

Certainly this restive spirit in the clinical material has not changed since. Repeated examinations are not the only harrying part of the business: the patient may be perturbed by other aspects of the ward round—by anticipation, by the conflicting opinions of his examiners, or by his own misinterpretation of some technical term which he is too frightened to ask about. Dr. JOHN ROMANO has investigated[1] 100 unselected patients at the Peter Bent Brigham Hospital before, during and after the Saturday morning teaching round and has shown some of the ways in which the patient may be unwittingly dismayed. On these rounds one or two patients from each of the four medical wards are presented to a group of 50–70 people, including members of the staff, visiting doctors, students and nurses. The patient's bed is placed in the centre of the ward, the history is given, the patient is questioned and examined, and finally his case is freely discussed. The occasion thus has an important publicity and the patient may have to wait for a period ranging from a few minutes to an hour for the ward round to reach him. The patients investigated were all prepared for the experience by the senior house-officer who told them, on the day before the round, that they were being shown to a large group of physicians because their cases presented difficulties which would be better understood and treated after general discussion. The personality of

1. *J. Amer. med. Ass.* Aug. 30, 1941, p. 664.

the patient was then studied and the emotional significance of his illness was assessed as far as possible; just before the round his respiration, pulse-rate and blood-pressure were taken. During the presentation of his case he was watched for changes in facial expression, blushing, pallor, restlessness, laughter or crying. Between one and three hours afterwards he was interviewed again and his anxiety was judged; he was then asked to define medical terms used at the bedside. The patients were adults except for 4 girls between the ages of nine and twelve and 1 boy of thirteen. Their ailments included infections, deficiency diseases, metabolic disorders, neoplasms, degenerations and psychogenic illnesses. The preliminary examination showed that 29 men and 30 women had little, 9 men and 16 women much, anxiety associated with their illnesses; in 2 women the illness was predominantly neurotic; and there was confusion, or a variable degree of awareness, in 11 men and 3 women.

The demonstration produced no severe emotional trauma in any of the patients. Nearly all were grateful for the preliminary explanation. There was, of course, some anticipatory anxiety, which reached its peak when the group entered the ward and came to the bed, and then subsided; 24 patients, including both the neurotics, admitted to feeling uneasy and tense; 12 of these belonged to the group of 25 who were already anxious about their illness, and 7 to the group of 14 who were confused. Only the two neurotics showed significant changes in pulse and blood-pressure. Repetition of the history distressed 13, especially when this was the occasion for learning unfamiliar facts. One youth discovered for the first time that he had had fits during the course of his illness and was greatly disturbed; a woman disliked a reference to a previous attempt at suicide; a man was wounded by the description of his ill-fitting shoes as "second-hand." The physical examination only annoyed 7. Some were embarrassed by being made to undress before an audience, and others were troubled because attention became focused on aspects of the disease which—to them—had previously seemed trivial. Thus a boy with diabetes and nephrosis became anxious when his heart was scrupulously examined. "I haven't got heart disease, too, have I?" he asked. Group laughter worried nobody; usually the patients could share the joke and joined in. Of 69 patients who remained for discussion of their cases 11 would rather have been removed, most of them because they felt tired or hungry or were in pain. Of 31 patients who were removed 16 would have preferred to remain; so that on the whole curiosity outweighed discomfort. Divergent opinions in the group seem only to have impressed patients with the thoroughness with which cases were being studied; which belies the oft-told story of a patient who, having listened to the unanimous opinion of a group of dressers that his tumour was benign and the honorary's "I propose to operate at once," got out of bed and went home, remarking "No, you don't!"

Definitions of medical terms by patients showed how wide interpretation may be of the mark. Neoplasm, mitosis, metaplasia and metastasis fortunately had no meaning for any patient. Shock, stroke, and paralysis were used interchangeably. Neurotic was defined as "nuts" or "due to imagination," but "nervous breakdown" was accepted as a respectable consequence of overwork. "Degenerative" was interpreted as implying moral decay, and "prognosis" meant "no hope" for some. This section of the investigation has a special interest, reminding us how constantly we should be on guard against the use of terms which may spread not only alarm and despondency, but undue hope. Thus it is common experience that for most patients the word "progressive" means a disease which will get progressively better; that "Graves's disease" carries the most gloomy interpretation; and that many a mother has been convinced that she must face a breech delivery from the use of the term "occipito-posterior." On the whole, however, Dr. ROMANO has shown that though patients may grumble a bit they are not unduly upset by ward rounds; and that a little extra care and vigilance will serve to allay what anxiety such experiences produce.

Annotations

FEEDING THE MINER

SINCE attention was last drawn in these columns to the need for supplementing the rations of workers engaged in heavy industries, such as coal-mining, steps have been taken to make supplementary rations available to miners. The Ministry of Food has been anxious to secure that this supplementary food is in fact consumed by the miners themselves, and it has therefore been considered necessary to make the issue at the mines concerned. There are several possible methods of making an issue of this kind—by the provision of packets of food containing pies, meat patties, &c., which can be given to the miner at the pithead for consumption either underground or when he goes home, by the provision of hot meals at the surface on completion of the working shift, or by sending suitable hot food down to be consumed underground during the mid-shift break. Each of the first two methods has been adopted fairly widely, with what success it is not yet possible to say. The first can at best provide a better cold "piece," which is obviously not ideal, and it may well be easiest to provide a hot meal in a surface canteen at the collieries that have already been equipped with pithead baths through the activity of the Miners Welfare Commission. Mr. David Robertson, M.P., favours the third method—a hot meal underground in the middle of the miner's working spell. The difficulties of this must vary a great deal from colliery to colliery, but it should not be impossible to serve hot meals under these conditions at several points for comparatively small groups of men. Many hospitals use thermos-like containers capable of carrying ample food for twenty or thirty patients and keeping it at constant heat for a time amply sufficient to meet mining circumstances. It may be that any system of distributing food underground raises difficulties in relation to payment and so on, and that the only practicable solution may lie in sending down individual containers with one man's ration in each. Even that should not be impossible, with a little ingenuity on the part of the makers of containers. Experiments have been carried out at a Midlothian colliery which promise good results in this distribution of hot food underground and the men in that colliery are said to favour the method. Mr. Robertson lately demonstrated some containers to members of the House of Commons and it seems probable that this system will be tried out on a more extended scale. It will be interesting to see whether developments along these lines do anything to remedy the notoriously high incidence of gastritis among coalminers. Efforts of this sort can scarcely fail to improve the miner's lot and must in the long run contribute to efficiency and output.

TRANSPORT OF CARBON DIOXIDE

MOST of the carbon dioxide carried from the tissues to the lungs is in the form of bicarbonate in the blood plasma. The limiting factor of the rate of CO_2 absorption in the veins and evolution in the lung capillaries is the stage $CO_2 + H_2O \rightleftharpoons H_2CO_3$, because this reaction, being molecular and not ionic, proceeds comparatively slowly, so slowly that if it were unassisted only 1% of the CO_2 known to be given off in the lungs from the blood could be given off in the second or so that the blood takes to pass through the lung capillaries. The assistant is the enzyme "carbonic anhydrase" which catalyses the reaction so that it proceeds at a proper rate. Oddly enough carbonic anhydrase is chiefly found not in the plasma but in the red blood-cells, so that evolution of the CO_2 in the lungs involves a complicated series of reactions.

The CO_2 is derived from H_2CO_3, carbonic anhydrase assisting the reaction, within the red cells; the H_2CO_3 comes from the potassium bicarbonate in the cells, which reacts with hæmoglobin, $KHCO_3 + H.Hb \rightarrow K.Hb + H_2CO_3$; the potassium bicarbonate of the cells is derived from sodium bicarbonate of the plasma by the exchange of Cl^- ions.

$$NaHCO_3 + Cl^- \rightarrow NaCl + (HCO_3)^- \text{ in the plasma}$$
$$(HCO_3)^- + KCl \rightarrow KHCO_3 + Cl^- \text{ in the cells.}$$

This interchange, familiar as the "chloride shift," occurs because the cell envelope is permeable to anions—Cl^-, $(HCO_3)^-$—but not to kations—Na^+, K^+. The net result is that CO_2 is given off and the plasma bicarbonate is reduced, and it is the activity of carbonic anhydrase that governs the final velocity of the reaction. The original work on carbonic anhydrase involved the destruction of the red cells by laking because standard manometric and colorimetric methods could not detect the activity of the enzyme in the intact red cells. Keilin and Mann,[1] by using a spectroscopic method, have now been able to show carbonic anhydrase at work within the intact red cell. They utilised the fact that hæmoglobin can be oxidised to methæmoglobin while the red cells remain intact. Methæmoglobin can act as an indicator since it changes its colour and its absorption spectrum when the acid form changes to the alkaline form between pH 6·5 and 9·5. Acid methæmoglobin can be changed to the alkaline form by adding carbonate or alkaline phosphate to a red-cell suspension or vice versa by adding CO_2 or acid phosphate. By using a special spectroscopic microscope eyepiece and matching the spectrum of the reaction chamber with the spectrum obtained by illuminating a movable wedge-chamber containing standard solutions of acid and alkaline methæmoglobin, they were able to estimate the amount of acid or alkaline methæmoglobin formed at regular time intervals, and so obtain a graph showing the velocity of their formation. When carbonate was added to a suspension of red cells containing acid methæmoglobin, 50% was changed to the alkaline form in 34 seconds. From what is known about CO_2 transport and its relation to changing alkalinity of the plasma, it was expected that carbonic anhydrase was also the limiting factor in these test reactions. Mann and Keilin[2] had previously shown that carbonic anhydrase is strongly inhibited by sulphanilamide, and this drug has the advantage of not reacting with methæmoglobin. If therefore sulphanilamide inhibited the test reactions, confirmatory evidence that carbonic anhydrase was the active enzyme responsible would be provided. This evidence was easily obtained, addition of sulphanilamide to the cell suspension greatly slowed the reaction; in a concentration of 5×10^{-4} M the 50% formation of alkaline from acid methæmoglobin took 210 seconds. In a similar but more complicated experiment, still with intact red cells, Keilin and Mann were also able to show that the reactions which induce the chloride shift are also delayed by sulphanilamide and are dependent on the activity of carbonic anhydrase.

We might thus expect that in anæmia, and possibly also in sulphanilamide poisoning, insufficiency or inhibition of carbonic anhydrase would lead to disturbance of CO_2 transport and also of oxygen transport since the two closely interact. There are two reasons why this does not happen. First, there is a large reserve of carbonic anhydrase, estimated by Lambie[3] as equal to ten times normal physiological requirements. He found that the anhydrase content of the blood could be reduced to a fifth of the normal without any signs of CO_2 retention appearing. The second fact is that there exists an alternative method of CO_2 transport which does not require acceleration by an enzyme or catalyst. If carbonic anhydrase is put right out of action the blood still takes up about 20% of the possible CO_2 instantaneously, the rest being taken up gradually as expected. Roughton[4] showed this was due to the formation of a carbamino-hæmoglobin compound according to the reaction.

$$Hb.NH_2 + CO_2 \rightleftharpoons Hb.NH.COOH.$$

This alternative is actually more important than is at first obvious because reduced hæmoglobin has been found to form this carbamino compound more readily than oxyhæmoglobin, so that Roughton estimates that 75% of the extra CO_2 taken up at constant CO_2 pressure when hæmoglobin is reduced is due to this reaction and only 25% is carried as bicarbonate. Thus thoroughly does nature provide for the protection of the vital CO_2 elimination and oxygen absorption under the most adverse circumstances.

VENEREAL DISEASE AND HOME VISITING

THE inoculation of a sensitive social conscience into those who lack one is the aim of many workers in the field of social service. From time to time efforts have been made to visit defaulters from venereal-disease clinics in their homes and a recent successful experiment of this kind was reported by Dr. J. L. Burn in our columns.[5] A health visitor who acted as part-time nurse in the venereal disease clinic undertook the home interviews and confined her visits to defaulting women and children. She succeeded in getting more than a third of the 134 defaulters to attend regularly and another eighth to attend irregularly. There are difficulties in the way of extensive home visiting, however, though they are not necessarily insuperable. At a small clinic, where the consultant only attends on given days, it is relatively easy to arrange for the social worker to do her visiting in the intervals of his attendances, but in a larger clinic, where consultants are working daily, it is difficult to arrange for the social worker to be absent. And now that many more women patients are at work, much of the visiting must in any case be done after clinic hours. In small areas the V.D. social worker is also the health visitor for the antenatal and maternity and child-welfare departments. This was so in the area described by Dr. Burn, and the arrangement had the advantage that the patients and their neighbours knew her and did not identify her merely with the venereal-disease clinic. In larger areas it is unlikely that a social worker could undertake such a combination of duties and the visiting would have to be done by an almoner or nurse connected only with the clinic; the drawback here is that the patient's neighbours might recognise the visitor and draw their own conclusions. Expectant mothers are probably the easiest group to visit with success, since they are often at home and probably alone, except for any other children, during the greater

1. Keilin, D. and Mann, T. *Nature, Lond.* Oct. 25, 1941, p. 493.
2. *Ibid*, 1940, **146**, 164.
3. Lambie, C. G. *Edinb. med. J.* 1938, **45**, 373.
4. Roughton, F. *Physiol. Rev.* 1935, **15**, 241.
5. *Lancet*, Nov. 22, 1941, p. 655.

part of the day. The anonymity of the visitor will mean much to patients, and methods of maintaining it should be well considered. Where children are suffering from congenital syphilis or have acquired vulvovaginitis it is rare for parents to refuse treatment for them; when they do the N.S.P.C.C. is willing and competent to deal with the situation. This voluntary body will also help when an infected mother refuses treatment for herself or wishes to have her child who has been cured of vulvovaginitis back at home with her. In large hospitals visiting may be difficult because the gathering ground is so great, and if many names and addresses turn out to be fictitious it may be deemed to waste too much time. There is evidence, however, that people are not giving false names and addresses so freely nowadays; and the provision of a little car for the visitor—anyhow in peace-time—should overcome difficulties of range. No doubt the personality of the doctor seen by the patient at the first attendance and the instruction then given verbally and by leaflet on the nature of the disease are important in keeping the defaulters-rate low. At the Lock Hospital much reliance is placed on this first interview, and letters only are sent out to recall defaulters. Only a very small percentage finally default under this system, and it must be remembered that some patients only come to a hospital to get an expert second opinion; when their suspicions are confirmed they return for treatment to the private doctor or the medical officer at the local clinic who first made the diagnosis. Yet no system can be regarded as perfect which allows even a few infected people to escape the net of treatment and spread the disease among their fellows.

IN DEFENCE OF A SEA DOG

WHAT distinguishes a pirate from an honest man? Chiefly, it seems, the lack of a licence to practise; but this is a distinction which ought to appeal to the medical profession. Drake was a pirate until Queen Elizabeth made him a captain in her Navy; after which he went on doing exactly what he had been doing before—but how much more respectably. Thomas Dover, whose memory Prof. J. A. Nixon tells us (p. 774) we have been slandering, was never a pirate at all. He was a member of a privateering expedition against Queen Anne's enemies in the South Seas. As we were then engaged in the war of the Spanish Succession, it is a pleasure to record that Dover's share in the sacking of the city of Guayaquil in Peru, and the taking of a Spanish prize, come under the heading of strict attention to duty. He was captain of the *Duke*, and later of the prize ship, but his colleagues, feeling no doubt that navigation was always a difficult art, would not let him sail them. They gave the responsibility to Alexander Selkirk, picked up from Juan Fernandez where he had been waiting for a lift for over four years and unconsciously providing the scenario for "Robinson Crusoe." After sacking the Peruvian city the English sailors slept in churches where they were much annoyed by the smell of the recently buried corpses of victims of a plague epidemic; and forty-eight hours afterwards, when aboard again, they all fell sick. On this occasion Dr. Dover can be exonerated less confidently from a suspicion of piracy, anyhow in a professional sense; he held no medical charge as Professor Nixon reminds us, but he took over conduct of the epidemic, directing the official surgeons to bleed the patients in both arms to the tune of 100 oz. apiece. After that he gave them dilute sulphuric acid to drink, and they all recovered except eight—no mean achievement on their part since the malady proved to be true plague. Dover, however, was never afflicted with the miserable virtue of moderation. He was a natural partisan of remedies, especially of metallic mercury which earned for him the name of the Quicksilver Doctor. Pirate or not—and we must of course agree with Professor Nixon and Sir William Osler that he was *not*—he was a fine full-blooded figure to have in our medical annals, from whom we, as his anæmic posterity, might welcome a transfusion. Such an enthusiast for phlebotomy should make an ungrudging donor.

PNEUMONIA TREATED AT HOME

THE value of chemotherapy in pneumonia is well authenticated from the records of patients treated in hospital, where diagnosis can be readily confirmed by X ray and pneumococcus typing, and where treatment can be controlled by laboratory tests and the patient's progress continuously watched. The proportion of pneumonias treated in hospital varies greatly in different areas, but the ease of administration of the sulphonamides and the ready response of the patient to these drugs will doubtless lead to a greater number of cases being treated at home. It is therefore important that the home-treatment of pneumonia should be both efficient and safe; in other words, that it should destroy the invading parasite without damaging the host. Some physicians are too heroic with this new weapon, forgetting that the sulphonamides are toxic substances, and unfortunate accidents occur—anuria from too high a concentration of the drug and insufficient fluid intake, or granulopenia from too persistent treatment. Others are over-cautious with the size of dose or stop treatment too soon so that the infection either smoulders on, perhaps with a pneumococcus now rendered drug-fast, or relapses after apparent cure. Treatment, with either sulphapyridine or sulphathiazole (the latter if available is as effective as sulphapyridine and less upsetting to the stomach), should aim at moderation. American workers[1] have found that there is no difference in the response of a pneumonic infection to blood-concentrations between 2 and 15 mg. per 100 c.cm. of these two sulphonamides, and they regard a total dosage of 25–30 g. as sufficient to control most pneumonias. The initial dose should be 2 g. (4 tablets) of sulphapyridine or 3 g. of sulphathiazole, followed by 1 g. every four hours for the first two days, and 1 g. every six hours for the next three days: with sulphathiazole particularly it is advisable to continue the four-hourly dosage day and night, for this drug is quickly excreted and therefore a steady blood-level is less easy to maintain. Here, sulphadiazine has a distinct advantage, for an effective blood-concentration of it can be maintained with smaller and less frequent doses.

Pneumococcus typing has never been popular in this country, and the new chemotherapy has pretty near sounded its death-knell. Yet pneumococcus typing not only gives valuable help in diagnosis—the isolation of a type I or II pneumococcus in an ill patient is practically diagnostic of lobar pneumonia and in most urban areas over half the lobar pneumonias are due to these two types—but it also helps considerably in prognosis and gives useful epidemiological data. That it can be carried out and prove informative in domiciliary practice has lately been demonstrated by McClure,[2] working in the central laboratory of the Provincial Department of Health of Ontario in close association with practitioners in the surrounding districts. Pneumococcus typing for the practitioners had been done in this laboratory since 1934, and of 1000 questionnaires sent out for information about the typed cases 647 were returned. In 495 cases pneumonia was present, and some form of chemotherapy, usually sulphapyridine, had been given to 386 of these. There were 21 deaths but in 2 of the fatal cases sulphanilamide had been given and in 6 others death was due to some other condition after the pneumonia had resolved. Excluding these 8 cases the fatality was 3·7% which may be compared with a rate of 9·5% in an earlier and similar series of 306 untreated cases; 80% of the deaths in the

1. Flippin, H. F., Reinhold, J. G. and Schwartz, L. *J. Amer. med. Ass.* 1941, **116**, 683.
2. McClure, W. B. *Canad. med. Ass. J.* July, 1941, p. 38.

latter group, but only 30% in the drug-treated series, were under 60 years of age. The average amount of drug given was 18·4 g. per case, and McClure notes that not only was there a tendency to give too little drug but also to stop the drug too soon. As for the distribution of pneumococcus types in this series, it is noteworthy that only 83 out of 386 (21·5%) belonged to types I and II, a striking difference from the usual distribution in towns. Similar investigations could be organised in this country and would probably yield much interesting information.

INTRAMUSCULAR BLOOD IN CŒLIAC DISEASE

ARGUING that some disturbance of the internal secretions is the cause of cœliac disease, J. Wickström [1] of Helsingfors advocates its treatment by intramuscular injections of whole blood. The blood, from healthy adults, usually relatives of the patient, was injected into the gluteal region in doses of 15–20 c.cm. without any additions at intervals of 2–5 days for a series of 10–30 injections. During this treatment all other measures were suspended. An average mixed diet, suitable for the child's age, was given with generous milk and milk mixtures, porridge and so forth—in fact a diet which would usually be considered quite unsuitable for patients with cœliac disease. Several cases were treated at training hospitals for nurses with frequent changes of staff so that the good results obtained cannot be attributed to expert nursing care. Five children with different combinations of symptoms, but all undoubtedly examples of cœliac disease, were treated. No sudden change in symptoms occurred and to begin with the stools remained unchanged. But after a few injections the weight began to rise and this improvement continued steadily throughout the course of injections with a corresponding bettering of the appetite. After 2–3 months the weight had risen by between 1 and 4 kg. and the whole picture of the child had changed. The extra weight gave the limbs a better-proportioned appearance, the abdomen became less distended, muscle tone improved and the child's general behaviour, including temper, showed a striking change for the better. The stools tended to remain of the cœliac type for some time when normal stools began to appear, often alternating with cœliac stools. The blood-sugar curves, however, retained their low characteristics and a tendency to low blood-phosphorus was also unchanged. It is not claimed, therefore, that cœliac disease is cured by whole-blood injections, but it seems clear that the general condition is so much improved that other treatment is unnecessary. Wickström urges that this form of treatment is indicated when the general state of the child with cœliac disease is bad, with much wasting and loss of appetite. In fact it is during the worst phases of the disease that good results can be obtained by whole blood, and thus a big step towards final cure can be taken just when other therapeutic measures have failed. It might equally be argued that it is just at such a stage that a dramatic turn for the better often takes place without any special method of treatment, so that Wickström's modest claims will have to be confirmed.

INCREASE OF SCABIES

USING as his material the patients admitted to infectious diseases hospitals in five English cities during the past ten years, Kenneth Mellanby [2] deduces that the incidence of scabies from 1931 to 1937 was low and regular in distribution but in 1938 began to rise briskly and since that year the rise has accelerated. Roughly, before 1938 the incidence in fever patients was 3 per 1000, whereas by 1941 it had risen to 25 per 1000. The incidence varied in the five hospitals but the upward trend was the same in all. The rise started before the war, and though war conditions have probably helped the spread of the disease they cannot be proved to have done so. In one of the cities there had been much evacuation, in another there had been little, and "shelter life" was common in two but absent in a third. Yet the scabies graphs are nearly similar for all three. The cause of this rising epidemic of scabies is unknown. Mellanby suggests that the increase in dancing and cinema-going between 1930 and the outbreak of war may be in part responsible for it. Some will not accept his thesis that the incidence of scabies in the general population is similar to that in patients admitted to fever hospitals, but there can be little doubt that the trends will be much the same. Attention was called to the increase in scabies by many school medical officers in their 1938 reports, so the beginning of the epidemic can be dated.

1. *Nord. Med.* 1941, **12**, 2889. 2. *Med. Offr*, Nov. 1, 1941, p. 141.

THORACIC SURGERY AT LEEDS

Mr. P. R. Allison has taken over the direction of a department of thoracic surgery at Leeds General Infirmary, relinquishing his appointment as hon. assistant surgeon. This teaching department is breaking new ground; the London Hospital and the Newcastle General Hospital have such units, and there are thoracic surgeons at many large hospitals, but Leeds claims to have the first thoracic department to be opened in a provincial teaching hospital. At present there are 10 surgical beds—5 for women and 5 for men—reserved for thoracic cases, which will form a war-time nucleus; later, when the hospital has its normal complement of beds, it is hoped to have more. Mr. Allison, to whose energy and foresight the department is largely due, will be assisted by an anæsthetist and a resident surgical officer.

SIDEROCYTES IN MAN

NOT long ago Grüneberg [1] found that granules of "free" iron could be detected by the prussian-blue test in the red blood-cells of mice suffering from an inherited disease typified by "flexed-tail and belly-spot." A few such cells also appeared in embryo and newly born normal mice and rats, and Grüneberg thought that they might also be found in man, if they were looked for. He now reports [2] that small percentages of siderocytes have been found in the blood of human fœtuses; the figures varied from 0·10 to 4·45%, and the amount of siderotic material was usually small. Grüneberg has tried to link up the presence of siderocytes with the change from megaloblastic to normoblastic erythropoiesis; this is unlikely since in man the change takes place at an early stage, being complete at about the 8th week whereas the age of the fœtuses whose blood was examined for siderocytes ranged from 33 to 40 weeks. The significance of the siderocytes is not known; present theory points to iron being transported in the plasma and combined with hæmoglobin in the bone-marrow, nor does it normally become "free" again until the hæmoglobin is liberated by the break-down of the red cell. Their presence in normal embryos favours the suggestion that the free iron represents a hitherto unknown mode of hæmoglobin synthesis rather than a disturbed hæmoglobin metabolism.

Sir ALFRED WEBB-JOHNSON, P.R.C.S., has been elected a vice-president of the Middlesex Hospital. This is we believe the first time this honour has been conferred on a member of the active staff.

Dr. R. DAWSON RUDOLF, emeritus professor of therapeutics in the University of Toronto, died on Nov. 2 after a short illness. He was a graduate of Edinburgh University and was elected to the fellowship of the Royal College of Physicians of London in 1910. He renewed old associations on the European battlefield in 1917–18, taking special interest in trench fever, and his popular little book on the Medical Treatment of Disease had the critical outlook which marks the scientific observer.

1. See *Lancet*, Aug. 16, 1941, p. 195.
2. Grüneberg, H. *Nature*, London, Oct 18, 1941, p. 469.

In England Now

A Running Commentary by Peripatetic Correspondents

FOR some of us it is hard not to feel sentimental about the-stately-homes-of-England-how-beautiful-they-stand, but we must reluctantly face the fact that they are already anachronisms, lovely vestiges of a more leisured age. If it seems unlikely that any more of them will arise in our time it is consoling to reflect that many of those still standing, their owners gone or roughly herded into a couple of unwanted attics, are proving useful for housing evacuated communities of one sort or another. Some of them are making excellent hospitals, convalescent homes or school buildings, even if the spectacle of Smith minor carving his initials on the old oak in the dining-hall causes their former masters to revolve unsteadily in the family vault. But the smaller places containing, let us say, a mere score of rooms have not been accustomed to harbouring a population of more than 20 all told (including the indoor staff), and when asked to accommodate perhaps two and a half times that number are apt to show their resentment in various ways. If the old squire, his family and retainers could make do well enough with three bathrooms and the same number of water-closets, the new school needs twice as many. The fact that these are constructed as fast as prevailing conditions permit does not solve the problem, for at this point the wells run dry, and the new bathrooms, to the eye imposing as they are, yield but few and scanty baths and in dry weather go on strike altogether, calling on the water-closets to follow suit. To be flushed with success may be for you or me just a pleasant experience; for a water-closet it is imperative. More wells have to be sunk, pumps and storage tanks installed before the old house is satisfied.

* * *

Our examination system is very fair, particularly in associating a newly appointed junior with a senior of experience to calibrate his sense of values and teach him that he must not be too exigent. He learns in time that a candidate may be an excellent practitioner in embryo although he has the most feeble capacity to describe, and exhibits a contempt for good English which is not the contempt bred of familiarity. A favourable impression is hardly created by the statement of a candidate that the patient is usually a male or a female; that such and such should be suspected until found absent; that the importance of this symptom is very important; that sleep should be attended to; that a fat person may cause confusion (apparently the intention was to inform the examiner that adiposity handicaps diagnosis); that the occurrence is unfortunate but of no significance. For such as these we have pity, but it is not the pity that is akin to love.

We soon abandon any expectation of encountering even the most elementary approach to style and construction, we accept the pabulum as containing all the necessary elements for our nutrition and do not trouble about the way it is cooked and served. Later we lose our wonder at the evidence of extreme illiteracy. I have collected the following from the paper of *one* candidate. (I am telling the truth, although I am certain that nobody will believe me.) I omit the errors which are practically universal such as preceed, accomodate, occurence, apetite, and others of that type, and confine myself to technical terms. Flem, Sharco joint, scabalæ, Pix disease, ematiated, caxecia, paracytic, syphillus, sight (site), stimulous, physic (physique), tacicardia, inflamertory, annorhexia, naushia, tabbacco, tick (tic), spescial, redenned, tosis, fibrilattion, ocluds (occludes). Now here is a queer thing. This candidate scored well over 60% in his paper and I am puzzled to explain his illiteracy. The obvious explanation is that his knowledge was acquired exclusively or mainly through his auditory channel and that he had never familiarised himself with the appearance of the words. Yet this plausible explanation is not satisfactory since the character of his answers supplied evidence of fairly extensive reading. One is inclined to suppose that spelling must be a special ability which comes to some people independently of phonetics or the extent of reading.

Not only may the paper be unreadable, it may be illegible. I sometimes marvel at my own patience when plodding wearily through almost completely undecipherable scrawl and even tolerating such carelessness as pinning pages out of order. In fact I am inclined to believe that illegibility may, like stammering, be a distinct advantage. The conscientious examiner, remembering that there may be much fertile matter in a muddy stream and unwilling to court a possible injustice, may prefer to presume the existence of something which might be identified through more trouble on his part. He would rather be a good-natured fool than, conscience-stricken, remain self-convicted of caddishness in penalising a physical defect or an attribute, albeit premature, traditionally regarded as a doctor's perquisite.

There appears to be some difference of opinion among the experts as to the best procedure to ensure the highest possible degree of professional efficiency and general culture, as a writer in the *Lancet* put it a few weeks ago in advancing his "plea for graduation at an earlier age." He deprecated the smattering of Greek and Latin and preferred the arrangements whereby clever boys of 16 already possessing a good grounding in biology are plunged in medias res. Yet actually on the same day I was confronted with a letter to the *Times* from the headmaster of a famous public school approbating my illustrious friend Professor Ryle and condemning early specialisation. (I was sorry to see his reference to the Regius Professor of "Physics" at Cambridge University but I am sure that this must have been a playful printer's variant and not a lapsus calami.) Other things, he reminds us, are expected of a doctor than technical knowledge—he is notably a man of science; he is a citizen holding a most responsible position in society, and as such his education should equip him with wide interests. In support comes a letter from a Scottish professor of anatomy whom we recall with affection when once upon a time he instructed our London youth until the call of his native town proved too strong against even our blandishments. He says that on returning to his own university he was relieved to find an absence of that degree of sheer illiteracy to which he had become painfully accustomed in examination papers in the south. This he attributed not to any inherent superiority in modern Scottish school education but to the proper proportion of the cultural subjects. Is it too late, he asks, to plead for the restoration of Latin as a compulsory entrance subject? An elementary knowledge of Latin or Greek is, he thinks, surely essential to the study of a profession whose terminology is almost entirely founded on those languages. He instanced the student who duly impressed by the derivation of the omo-hyoid muscle inquired "Well what about 'omo sapiens"? The story he assures us is painfully true, and recalling the examination papers I have recently corrected I have no difficulty in believing it.

* * *

It is good for the soul from time to time to re-examine principles, and try to find out how much foundation they have in fact. One may be led to strange conclusions. It has long been assumed that the bigger, chubbier and heavier the baby the better it is; that the child should be large and firm, with a "good" colour and good teeth; in fact the standard nutrition should be "A" in terms of the school medical examinations. This phrase nutrition A is vague. Nearly all the experiments done to demonstrate the desirability of this state of health have used children or young animals, and the rate of growth has been one of the main criteria. There is indeed some evidence that, with the improved diet which many children get, there has been an increase in average size (post or propter?).

If we ask the obstetrician whether a hard, large and well-calcified infant, or a small relatively rubbery infant makes the passage through the birth canal more easily we are told that the latter has an easier voyage. Does any mammal increase its food intake or drink the milk of other lactating animals during pregnancy? Is it not possibly an advantage to have a low blood-calcium near term, so that the uterus may be more sensitive to the stimulus to contract? Immediately after recovery from labour I imagine that most mammals increase their food intake, and so should women. Let them take their lime and phosphates, their ergosterol and carotene derivatives and their metallic salts in the puerperium, both as an aid to lactation and in anticipation of their next pregnancy.

The strictest physical examination in Britain is probably that of prospective pilots in the Royal Air Force. I don't know what the average height and weight of these men is, but they seem to be below the average of the population both in stature and girth; yet they are physically one of the soundest groups of men in the world. Again, complete life tables show that age for age men of slightly less than average height and weight have a better expectation of life than men of greater stature and bulk. So is nutrition A really for the best? We might do better to produce a race of small wiry individuals.

* * *

The most beautiful thing in my garden at the present moment, to me at any rate, is the notched green leaf of *Barbarea præcox*, a winter cress which is going to provide me with salad for the next few months. It is, I am told, named after the holy Barbara of Nicomedia, patron saint of gunners, who has her day on December 4. The summer flowers flaunt their fading beauty, the chrysanths like hardy courtesans beckon me with waving grace and dye and subtle smell; I scorn the lot. With sense and season I seek more solid pleasures. The feeling of beauty in man (pace Professor Joad) is entirely utilitarian in origin, and in younger communities is demonstrably so now. It was only with the coming of the unnatural leisured class, unheld by primary needs, that it became elaborated. Colour that was meant to tell of ripeness became a creed; productive country a landscape; the beauty of woman and child, a lure to breeding, became in form and contour a fetish. Then this feeling was in many cases seized and refined by that strange phenomenon which I term "exclusive grouping." This you see best in the small boy whose gang has a secret sign, an adult form is Freemasonry. You see it in dress—that fellow who wears a made-up tie is beyond the limits of loathing. But above all you see it in the arts—he who cannot appreciate (as we do) the music of Bong is surely bestial, or the painting of Cong is a crass outsider, or the verse of Dong is a tick of the outer edge. Probably protective.

* * *

As a change from a life made up of sewers, forms and the horrors of the state let loose in medicine, I have become an amateur veterinary surgeon. Now I am seeing as many furry patients as their human counterparts, and it is strange how akin they are. Diana, a sleek lady spaniel in black satin, is as perpetually feminine-ised as a certain sophisticated patient of peace-time practice. As soon as a male of her species enters, Diana exerts all the usual tricks of her sex, although her languorous eyes are sadly handicapped by a streaming conjunctivitis. Her human counterpart could also spare a glance of interest and appreciation even when in the most excruciating agony. Both had, of course, "seen many other doctors before I came to you, doctor." There the resemblance ends, for Diana's eyes cleared up at a surprising pace and she is glamorous again. The rapid onset and equally rapid cure among the animals surprises me. Porky, a spunky sealyham, was brought with a large corneal ulcer and corneal vascularisation. In other spheres I should have given a gloomy prognosis, but from a dull, torpid, butting-into-chairs quadruped, he was back to cat chasing and all other normal activities in two weeks. I nearly said "fit for parades, P.T., parashot, guards, and games," but the Service has not caught me as much as that—yet. A host of minor points crop up which puzzle me in this new vocation. How much sulphapyridine should be given to a flock of hens suffering from coccidiosis, and when and how should it be given? The vet said "Burn 'em all," but the large flock is surprisingly still in being after change of ground and thorough cleaning of the pens. I hope to succeed in this hen racket, as most traditional hen cures seem to go back to the tar-water and boiled-beetle era. Various fractures have also appeared, but my ambition to treat a bilateral fractured femur of the hind legs (how do the vets describe this?) in a dachshund by a roller skate strapped under the tummy did not meet with the approval either of the dog or the owner. A haughty spaniel scorned to use my plaster with walking iron applied to his fractured femur (off fore); now I know which fractures need plaster and which do better by natural methods. Another pitfall turned up when a little terrier pup was treated for worms on evidence which was later found to be an elastic band, one of many swallowed in a successful raid on the stationery drawer. The cure of some pets has baffled me, including our own pekinese, who seems to say a doctor's family is always badly treated. I believe a large beer bottle filled with hot water between the legs is helpful, although it makes him into a caricature of an incorrigible toper finishing off a last pint in bed. After all this I must write a memorandum on pets. The home treatment is confused and old wifish and needs drastic overhaul. I can see no reason why what works in the rest of the family should not work in them (if we can get the doses right).

Special Articles

SURPLUS OF IRISH DOCTORS

THE Eire papers have been discussing whether there are too many doctors in Ireland. It seems that no-one knows how many there are at present or how many there were in more normal times. Neither the Medical Register nor the Medical Directory gives much help, for many medical men practising outside of Ireland are in the habit of giving their home addresses for years after they have left the country, probably because the family home is their only permanent address. A few years ago it was calculated that, though there were between 2000 and 3000 practitioners in the Medical Register with Irish addresses, the number in actual practice in Eire itself was not more than 1500. The number now, including those in practice and those unemployed, is probably much greater than this. The reasons for the increase are not far to seek. For generations the Irish schools have educated large numbers of medical men for export. The output was far greater than the home demand. Young Irish graduates went to make their living in England and the British Dominions, where like Scottish graduates they were well received and were usually reasonably successful. This outflow is much diminished since the war began. It has not been easy to obtain a permit to cross the Irish Sea, though the authorities do not, as a rule, refuse permits to those who have obtained posts in Great Britain. They usually refuse permits, however, to those who merely wish to seek employment. In the past many young Irish doctors took resident posts in the British provincial hospitals, after attending a preliminary interview; they are now unable to obtain travel permits in order to attend such interviews, and so a high proportion of recent medical graduates are compelled to remain in the land of their birth. Moreover, a considerable number of young Irish medical men who were working in England have returned home, crowding further an already overcrowded market. No doubt some of these had always intended to return to Ireland when they had gained some experience in England.

Lay and professional correspondents in the Irish press have pointed out that the present supply of medical men is greater than the present demand, but few seem to have asked whether it is greater than the present need. They have been more concerned with the livelihood of those in the profession than with the needs of the country. Many of the essential public services are, in fact, much undermanned. This applies especially to the county hospital service and public-health services. Most of the county hospitals are new and well constructed but quite inadequately staffed. The personnel usually includes a single surgeon, who is a whole-time officer except for consulting work, an anæsthetist, and in some cases a visiting physician. The surgeon must also fill the rôles of gynæcologist, radiologist and pathologist. No specialist help is provided except for the occasional visits of an ophthalmologist in some cases. However able the surgeons may be—and they are good all-round surgeons—they have no opportunity of doing first-class work.

In the local health services a county medical officer of health and a county tuberculosis officer are to be found in each county. The county M.O.H. has to be school medical officer in addition; this school work has been undertaken with great zeal, but in few counties has the M.O.H. had time to examine each child more than once during its school life. Without more assistance this service—which should be one of the most repaying—must continue to fall short of what is possible. The poor-law dispensary service is probably adequately staffed in the

country districts, but is grossly undermanned in the cities; much of its work is undertaken by the outpatient departments of the voluntary hospitals, which are thereby diverted from their proper task of providing consultant services. The country needs an increase of the personnel of the public services by at least half as much again, but at the moment the central and local authorities are unable or unwilling to provide the required funds. Yet until the public services are developed there should be no talk of too many doctors.

Some medical teachers maintain that teaching is hampered by the large numbers[1] in the classes, and especially in the clinical classes. This difficulty, if and where it exists, seems to arise from faulty organisation of the clinical teaching, which in the Dublin hospitals is done by seniors, who, as examiners, naturally attract a large number of students. If they shared more of their work with their juniors, the size of classes would become more manageable.

It would be hard to break the tradition of the Irish schools in educating more doctors than the country can provide work for, even if it were wise to do so. Many think that the country gains prestige from the quality of the doctors who leave it to work in other lands. Were the schools to limit drastically the number of students, many would still choose the wider field for their future careers and Eire would be inadequately supplied. But Irish emigrants—whether professional men or manual labourers—are not a complete loss to their country. Many of them send home help to their parents and relations which more than repays them for the expense of their education.

THE FORTIFICATION OF FOOD

ON Dec. 3, in the rooms of the Chemical Society at Burlington House, a successful joint meeting of two societies was held to hear papers on the Fortification (Enrichment) of Human Foods by the Addition of Specific Nutrients. The chair was taken in the morning by Mr. E. B. ANDERSON, chairman of the Food Group of the Society of Chemical Industry, and in the afternoon by Mr. E. B. HUGHES, D.Sc., president of the Society of Public Analysts. Mr. A. L. BACHARACH, F.I.C., who discussed the principles of food fortification, said he used the terms "fortification" and "enrichment" synonymously, although Mr. D. W. Kent-Jones, F.I.C., and Mr. A. J. Amos, F.I.C., who read the second paper on the technology of fortification, suggested applying "fortification" to procedures adopted to increase the amount of a nutrient present in a processed or manufactured food to the level present before such treatments, and "enrichment" to the addition of further nutrients over and above those normally present in the untreated food. After considering the standard examples of food fortification—the iodisation of table-salt, the addition of vitamins A and D to margarine, and the Government's proposals for fortifying white bread (from 75% extraction of flour) with aneurin and calcium carbonate—Mr. Bacharach put forward some general principles which should govern the fortification of all foods. He insisted that there was no difference between "natural" and synthetic vitamins, that the object of food fortification was, in general, not restorative, that is to say, was not made primarily to restore to a food something taken from it by refining process, and further, that no heed should be given to the arguments that a particular addition to a food was undesirable because the added nutrient was not "natural" to a food. Rather, he argued, fortification must be considered solely in relation to the proven need of a particular population for a given nutrient, and to the suitability of the food to which it was proposed to add the nutrient as a fortifying agent. Questions of stability, price and palatability must all be taken into account. All the resources of organic chemistry and chemical engineering, as expressed in the manufacture on a large scale of essential nutrients, should be mobilised to make good such specific dietary deficiencies as could be prevented by substances whose commercial production could be economically undertaken.

1. The number of students attending courses in medicine and dentistry during the sessions 1940–41 in the three colleges of the National University of Ireland has recently been given as:

	Dublin	Cork	Galway
First year students	352	79	57
All students	937	360	214

Dr. KENT-JONES and Dr. AMOS summarised the methods adopted during the "vitaminisation" of margarine, in which thorough blending, with avoidance of aeration and critical choice of suitable fats and the application of rapid but adequate control tests at every stage in manufacture, were all necessary to give a satisfactory final product. They gave details of the fortification of bread with vitamin B_1 by the mechanical introduction into the flour stream of a specially prepared flour concentrate, the nature of white flour and crystalline aneurin being such as to make the direct admixture of one with the other impracticable. They also referred to the irradiation of milk, or its fortification with vitamin D in other ways, as carried out fairly extensively in the United States, and to the incorporation of vitamin C in jams and preserves, a procedure not practised on foods to be sold in this country but carried out commercially on supplies intended for British prisoners of war. They mentioned the difficulties that had arisen in the selection of a suitable type of calcium carbonate for the fortification of bread, but said that the creta præparata of the B.P. was satisfactory for this purpose.

METHODS OF ANALYSIS AND CONTROL

After the lunch interval Mr. H. E. COX, D.Sc., discussed the machinery for the enforcement of standards laid down for fortified foods. He thought that, with the lapse of defence regulations, the Minister of Health would be found not to have the powers, at present held by the Minister of Food, to enforce the positive fortification of food, but would return to the status quo ante bellum, under which he would at most be able to prohibit objectionable procedures and demand a maintenance of certain natural standards. New legislation would be necessary if even voluntary fortification was to be permitted and adequately controlled. At present, the addition of wholesome ingredients to foods was not forbidden by law unless this was specifically stated in particular statutes or regulations; it would be desirable for fortified foods to comply with certain legal stated requirements in which both minimum and maximum should be given for each permitted addition. It was most undesirable to make regulations about the quality of food in general, and the nature and quantity of additions in particular, unless adequate analytical methods were available for those who had to help in the enforcement of such regulations. Whether or not official methods of testing were desirable, recognised and standard methods would almost certainly be necessary, and in supplying these both the Food Group and the Society of Public Analysts should continue to play the valuable part they had played in the past. It was ultimately the public analyst's responsibility to secure that fortified foods, like any other foods, conformed with their descriptions on label and advertisement.

The methods at present available for the estimation of minerals and vitamins in foods generally, and particularly in fortified foods, were surveyed in the last paper, on the analysis of fortified foods, by Mr. H. E. MONK. After dividing the available methods into biological, microbiological and chemical or physico-chemical, and referring to the advantages and disadvantages of each, Mr. Monk discussed the special methods devised for vitamin A, vitamin B_1 (aneurin), riboflavin (sometimes incorrectly called vitamin B_2), nicotinic acid, ascorbic acid, and vitamins D (D_2 and D_3), showing that adequate chemical or physico-chemical methods were available for all of these, except for vitamins D_2 and D_3, for which a biological test is as a rule essential. He also referred to the possibilities of a polagraphic method for estimating members of the "vitamin B_2 complex" and to the microbiological methods which are being developed in the United States much more extensively than in this country.

MIDDLESEX HOSPITAL.—It was announced at the meeting of the court of governors of this hospital on Dec. 10 that repairs to the north-east wing were now nearly complete, and part of it had been reopened. Five new huts (200 beds) erected by the Ministry of Health at Mount Vernon Hospital have been allocated to the Middlesex. The Emergency Medical Service is also shortly opening a radiotherapy centre which will be able to deal with 150 patients at the Mount Vernon Hospital.

Letters to the Editor

SALT-WATER SURGEONS

SIR,—"Dover's powder, the nostrum of a pirate," you say in your issue of Nov. 8 (p. 568). This strange accusation against Thomas Dover, pupil and friend of Sydenham, seems to have been the invention of the late Sir William Osler. The expedition of the *Duke* and *Dutchess*, commanded by Captain Woodes-Rogers on which Dover sailed was in no sense a piratical cruise. In 1708 some members of the Bristol Society of Merchant Venturers fitted out two ships which sailed to the South Seas. Captain Edward Cooke was second captain on the *Dutchess* and left a journal of the voyage which has been published. It is less well known than Woodes-Rogers' book and is the work of a better educated man: in it Cooke says that the commanders of the *Duke* and *Dutchess* had "commissions from his Royal Highness Prince George of Denmark, then Lord High Admiral of Great Britain, Ireland, etc." In other words the expedition sailed under letters of marque. They set out with four other ships, including the *Hastings*, man-of-war under Captain Paul. Commissions were granted to the two ships "to Cruise on the coasts of Peru and Mexico, in the South Seas, against her Majesties enemies the French and the Spaniards." Sir William Osler before his death frequently expressed his satisfaction that Dover was, as he put it, "such a respectable character," and fully retracted the charge of piracy. Dover's place in the expedition was that of representative of the owners, and in that capacity he was president of the council. He did not rank as one of the surgeons. These were, John Ballet who had sailed with Dampier previously, Samuel Hopkins, a nephew of Dr. Dover, James Wasse, surgeon, Charles May, his mate and John Lancy, assistant. Mention is made also of "John Vigor, a reformado, to act as Captain Dover's ensign when ashore." Yet Dover received £423 as chief medical officer in addition to his profits as a shareholder. Woodes-Rogers disliked Dover and complained of "want of sufficient medicines with which till now I thought we abounded, having a regular physician, an apothecary (i.e. Hopkins) and surgeons enough with all sorts of medicines on board." He would have preferred that Dover should have confined himself to the duties of a "regular physician." But this was not Dover's way. When a prize had been taken he claimed, successfully, to be appointed to command her. However the navigating officers felt no confidence in his seamanship and he was forbidden to interfere in any way with the navigation of the ship. It was agreed by a majority of the council (Dover presumably being in the chair) that "Capt. Robt. Fry and Capt. Will. Stretton, shall both act in equal Post in the Sole Navigating Sailing and Engaging, if Occasion should be, under Capt. Tho. Dover, on board the *Batchelor Frigate*"—thus the prize was newly named—"and that the said Capt. Tho. Dover, shall not molest, hinder or contradict them in their business; and we do appoint Alexander Silkirk master." The last-named was Selkirk whom the expedition had taken off the island of Juan Fernandez.

Dover's famous powder, compounded of ipecacuanha and opium, was not introduced by him as a narcotic. It was no "symbol of drowsiness and perspiration" to him. Dover regarded ipecacuanha as the active ingredient in his powder, a drug which was prescribed both as a febrifuge and as a remedy for dysentery. In fact it ranked almost with cinchona bark as a stand-by in the tropics. He added the opium to counteract the nauseating effects of ipecacuanha. Callander, in his "Voyages to the Terra Australis" (London 1768) speaks of this expedition as one of the best organised and equipped that ever left England.

The *London Magazine* for April, 1742, records the death of "Dr. Thomas Dover, famous for administering quicksilver to his patients, in the 85th year of his age. The last years of Dr. Dover's life were spent at Stanway House. . . . He was buried at his own request in the vault belonging to the Tracy family." The statement in Munk's Roll of the College of Physicians that he died in London at his house in Arundel Street is wrong. The register of Stanway Church, in Gloucestershire, contains the entry that Thomas Dover, M.B., was buried there on April 20, 1742. The vault of the Tracy's is under the altar, but the church contains no memorial of the family nor of Dover—an omission which it was Osler's wish to have rectified, but the war of 1914 intervened.

Bristol. J. A. NIXON.

CERTIFICATES FOR EXTRA MILK

SIR,—A good deal has been said in your columns lately about lax certification and multiple certificates, but we look like being put still more severely to the test now with the distribution of extra milk and eggs. Great pressure will be put on us to sign certificates for conditions outside those for which we are entitled to do so. These are very limited; but the indications are quite definite and leave no room for borderline lesions that might be brought within them. Unfortunately these schedules have been issued in such a way that the doctor will have the greatest difficulty in refusing a certificate. No doubt before sending out the instructions the officials of the Ministry of Food thought it over carefully and had good reasons for imposing secrecy on all concerned. They have come under "Confidential Cover—for the information of registered medical practitioners only," with the added heading "Not to be Divulged to the Public." How a doctor is to carry this out with a patient persistently demanding the certificate as a right remains to be seen. After having said ten times "No! your complaint does not come in the schedule of conditions qualifying for priority claims in liquid milk" he is almost bound to show the schedule in order to get the patient out of his consulting-room. We have to consider this in the light of the drink-more-milk campaign of recent years. Many a mother feels she has saved her weedy-looking son from consumption by making him drink a pint of milk a day. Many a shorthand typist who once had a lump in the neck thinks she will get "glands" unless she does the same. After supporting that campaign we cannot go telling them that it really does not matter. We can only say that the Ministry of Food has not got enough to go round, and that they must risk the invasions of the tubercle bacillus as they have the bombing plane. They will take it if they know; but the way in which it has been put forward makes it seem as though the doctors were capriciously depriving them of what they have a right to, and the medical profession was going back on these standards of preventive medicine that they have laboriously been building up of recent years. The reasons for the secrecy which balance these facts must indeed be weighty, and if the Ministry of Food can see their way to advertise the schedule in the daily papers and to post them on the doors of local food offices they will have a far better chance of their instructions being carried out. The people as a whole do not rush to obtain commodities to which they are not entitled and if they know that there is no extra milk for them thousands will refrain from asking their doctors for the certificate. We shall then be in a stronger position to resist the persistent demands of those who through fear or greed badger us for wrongful ones. Under the best conditions this resistance will not be easy.

Streatham. T. B. LAYTON.

POSITION OF THE BODY DURING SLEEP

SIR,—During my short period of clinical work I began to record from every medical case, and indeed from every available colleague or friend, the position he or she took up during sleep. It soon became clear that this was definitely characteristic for each individual. The individual seldom varied the position and when he did he was fully conscious that he had made a change. I often checked the statements of patients during night duty and found them to be correct, and I observed that the great majority maintained their position throughout the night. Two facts which are not unknown to physicians were often found: that people with angina pectoris avoid lying on the left side, and that patients suffering from acute and painful diseases occupy a position in which they feel the pain least. A comparison of the position of the body during sleep in cases of true angina pectoris and of heart neurosis might be worth following up.

I always asked specifically if there was any period in the lives of the subjects when they slept on their abdomen. Many people who did so for long periods were

cases of either past or present liver or gall-bladder disease. Of 18 cases of catarrhal jaundice 15 had slept on the abdomen from their youth up, or at least for many years, whereas of 392 patients and healthy controls without any history of liver affection only 11 favoured this position. A high proportion of patients with cholelithiasis said they slept on the abdomen. My cases amounted to only 400 and there were obviously too few healthy controls on which to base a conclusion. Further research, however, should show whether this observation in cases of liver affection can be confirmed, and if so whether it is primary or secondary. The abdominal position during sleep may be either the result of the liver trouble or one of the factors which have contributed to it. Some simple considerations seem to indicate that the latter possibility can by no means be excluded a priori. The mechanical conditions under which the bile flows from the gall-bladder vary greatly with the body position, but there are other factors which may play a more important rôle than gravity. The intra-abdominal pressure and its variations caused by respiratory movements (of the diaphragm, &c.) may differ greatly according to the position in which the subject is lying. If he lies on the back, the abdominal wall easily moves upwards when the diaphragm is lowered. But when he lies on the abdomen the anterior abdominal wall becomes much more rigid, so that inspiration should cause the intra-abdominal pressure to rise much more. To these considerations may be added the effect the respiratory variations in intra-abdominal pressure have on the circulation of blood (and possibly lymph) in the liver. One physiologist put it shortly by saying: "The liver is pressed out like a sponge by the breathing movements." These points show that it will not be easy to decide whether the symptom is post hoc or propter hoc, or even one of the causes which predispose to an injury to the liver cell.

These incomplete observations may perhaps encourage someone who has the clinical material at hand to carry them further and throw some light on a subject which seems to have been neglected hitherto.

University of Birmingham. F. SCHÜTZ.

THE STICKINESS OF PLATELETS

SIR,—May I be allowed to make some remarks with regard to your annotation of Nov. 15? In 1929 I published in collaboration with Miss Székély the first functional test for blood platelets. In these investigations the velocity of disappearance of platelets was determined in Kristensen's counting fluid. This was called the velocity of platelet disintegration. Mrs. Payling Wright objects to that designation, showing that many platelets disappear because of sticking to the glass walls. Really neither of the conceptions is absolutely correct. The extravasated platelets undergo a series of changes resulting in their disintegration. Agglutination and adhesion are among these changes. As the direct enumeration of platelets sticking to the glass walls is impossible, we are at the present moment unable to decide how much of the disappearance of platelets in vitro is due to their adhesion and how much to disintegration. In a plaque of platelets adherent to a glass surface it is impossible to decide how many of them are intact. The formation of substances with vasoconstrictor action during the coagulation of blood (O'Connor, H. Freund) suggests a fairly rapid at least partial disintegration. Wright's observation that higher concentrations of anticoagulants lessen the stickiness of platelets is in agreement with the findings of Bürker and others that substances inhibiting the coagulation of blood prevent also the agglutination and disintegration of platelets, and supports the opinion that adhesion and disintegration are two stages of the same process.

Although from Wright's interesting investigations it is evident that a considerable number of platelets adhere to the glass walls and are incompletely if at all disintegrated, we feel justified, for the sake of simplicity, in calling our test the "disintegration test" of blood platelets. We have shown with our method that hæmophilic platelets have a normal "disintegration" velocity. This finding disproves a conception of Howell's which has later been abandoned by Howell himself. The only condition in which at that time the disintegration was found to be absent, very slow or delayed was in thrombocytopenic purpura. Later I described a case of chronic thrombocytopenic purpura in which after adrenalone treatment (Klima) the platelets rose to 1 million, but their disintegration was still absent. The clinical symptoms were not improved. In the last three years the velocity of platelet disintegration has been determined in the Children's Hospital, Birmingham, in a series of cases with hæmorrhagic manifestations by me, by Dr. T. W. Lloyd and recently by one of my laboratory assistants. Five cases of hæmorrhagic disease with normal or only inconsiderably reduced numbers of platelets and absent or retarded disintegration were found. One had a hæmolytic anæmia, one a severe hæmorrhagic disease of the newborn, one a purulent peritonitis (all three with prolonged bleeding and clotting time), and two were clinically typical cases of Werlhof's disease with prolonged bleeding and normal clotting time but with 120,000–150,000 and 220,000–250,000 platelets respectively.

Horwitz has improved our method, using the counting method of Flössner-Hoffmann. He has confirmed all the observations published in our first paper. Shortly afterwards important work on the function of platelets was done by Morawitz and his pupils. Jürgens used the agglutination as a test for platelet function and Morawitz himself has constructed an apparatus for determining the formation of a platelet thrombus. By means of that apparatus the real nature of a familial hæmorrhagic diathesis observed in Finland and described by Willebrand has been elucidated. Unfortunately there are no definite morphological signs of a functional deficiency of platelets. The only certain fact seems to be that platelets with signs of immaturity (large forms with basophilic plasma, Ogata's tails) are also functionally deficient. Glanzmann, who was the first to put forward the conception of a functional disturbance of blood platelets based that idea on morphological findings which unfortunately are contestible. His idea, however, proved to be true, as the functional tests have later shown. In recent years several cases have been described with hæmorrhagic manifestations and extremely large numbers of platelets. They have been called hæmorrhagic thrombocythæmia. In a few of the papers photograms are reproduced of blood films in which not only the large number of platelets can be seen but also that they are not agglutinated, thus more resembling a magnesium sulphate film than an ordinary blood film. We regard it as probable that in that condition the platelets are functionally deficient, their susceptibility to agglutination being reduced.

The Children's Hospital, Birmingham. H. S. BAAR.

WHEN TO TIE THE CORD

SIR,—Regarding your reference to Barcroft's experiments influencing the time when the cord should be tied, I would like to put forward the following suggestion. If oxygen lack, as shown by Barcroft, is the stimulating factor in promoting respiration, surely it means that oxygen is normally cut off at the end of the second stage, and it therefore matters little how early or late the cord is tied from the aspect of apnœa in the fœtus.

As for blood loss to the fœtus, I do not agree with Mr. Chisholm's argument, first, because he considers that bleeding takes place from the fœtus into the placenta until pulsations in the cord cease; and secondly, because he states that the only propelling force of fœtal blood from the placenta is the fœtal heart. He suggests that the cord should be tied earlier because of the risk that the fœtus will lose blood in two ways: by bleeding into the "placental lake" and by actual bleeding from the placental surface at the time of separation. It is difficult to decide how much blood does actually enter the placenta at the end of the second stage. Because the cord is pulsating it does not follow that blood is flowing in it, but merely that the pulsations are transmitted as in any other fluid medium. (If an artery is tied, it still pulsates on the proximal side of the ligature until obliterated by the relatively slow process of thrombosis.) Mr. Chisholm himself infers that, because the inert placental lake may offer such resistance that the fœtal blood-pressure is largely overcome, therefore there is little or no venous return. I suggest that the whole crux of the case is the fœtal arterial blood-pressure versus the passive resistance offered by the placental channels, which at this stage are greatly narrowed by shrinkage

of the placenta following reduction in size of its surface of attachment to the now almost empty uterus. The "intraplacental blood-pressure" must also by this means be greatly increased, and thus add to the resistance of blood flow from the fœtus. If this is so, the increased intraplacental pressure will mean increased venous return to the fœtus, as well as decrease or cessation of blood loss via the umbilical artery.

So we arrive back at the question of when to tie the cord, not from the point of view of the presence or absence of pulsations in it, but of how long it will take the placental venous pressure to equalise the fœtal venous pressure—i.e., how long it will take the placenta to empty itself into the fœtus. I have always tied the cord rather as a routine procedure than as a carefully premeditated step influenced by the immediate state of the fœtus or a remote one of the infant. At the end of the 2nd stage the exchange of blood gases between maternal and fœtal blood must be negligible, owing to the greatly limited uteroplacental circulation caused by the retracted uterine muscle. For this reason, I cannot see why apnœa in the newborn fœtus can be appreciably influenced by tying or not tying the cord early. What it does influence is the amount of blood returned to the fœtus by the placenta by virtue of its own raised venous pressure, but that there is an appreciable intraplacental pressure is easily shown by the gush of blood which follows removal of the hæmostat from the placental end of the cord.

Mr. Chisholm's second point, concerning the blood loss to the fœtus from the placental surface at the time of separation, depends on how early the placenta separates, which usually does not happen until after the cord has been tied even by those who "stand and wait" before tying it.

To summarise: (1) Apnœa of the newborn fœtus is uninfluenced by the early or late tying of the cord. (2) The amount of blood gained or lost via the placenta in the 3rd stage depends more on the intraplacental blood-pressure, and the time allowed before tying the cord, than on the presence or absence of pulsation in the cord. (3) The fœtus rarely has the opportunity to bleed from the placental surface.

Seaforth, Liverpool. ROBERT C. PERCIVAL

HYPERTENSION

SIR,—We would like to reply to Dr. Izod Bennett's letter of Nov. 29. We did not suggest that Goldblatt's work indicated that hypertension was usually produced by a unilateral renal lesion. We pointed out however that in a few cases hypertension and unilateral renal lesions coexisted, and that in some of these the hypertension has been relieved by nephrectomy. Unilateral renal disease is frequently "silent," and although Dr. Bennett states that each of the cases described in our article had localising signs from the very outset a more careful perusal of case 1 would show that this was not so. It is on this account that we suggested that since in some cases there appears to be an ætiological association (not explained by Goldblatt's work) between hypertension and unilateral renal disease, and since a unilateral renal lesion may be otherwise symptomless, it is most reasonable and humane whatever the financial cost to exclude such a lesion by a complete urological investigation. That this should be carried out in all cases is perhaps an overstatement, but it seems that this is necessary in order to disturb the complacency with which so many clinicians seem to regard this very common disease.

G. O. RICHARDSON,
G. A. SMART.

CRUSH INJURIES

SIR,—The ill effects of "crush syndrome" have been ascribed to the liberation of toxins from the trapped limb after its release. It has been suggested that the application of a tourniquet to the limb before it is released, above the site of compression, might prevent this. There is another sequel of such an injury which might almost be called "release syndrome." Here the patient remains comparatively well and cheerful while trapped, but dies suddenly soon after release, presumably because of an even more violent flooding of the system with toxins. It would be interesting to hear whether M.O.s of mobile units have experimented with tourniquets. In the raids of last autumn many of these patients were not reaching hospital alive or were dying soon after admission, and it might well be that a tourniquet would have saved them.

Highgate. R. L. BENISON.

ANÆSTHETIC FLOWMETERS

SIR,—With reference to the note on flowmeters for gas or liquid in the *Lancet* of Dec. 6 (p. 718), I may state forthwith that I make no claim to have been the first to suggest the use of rotameters for anæsthetic gases and cannot be accused therefore of any attempt to steal the thunder of Richard Salt of the Nuffield Department of Anæsthetics. Nevertheless, in recognition of valuable help extended to me in the past by instrument makers, I feel that the moment is opportune to record the following facts.

In 1928 Messrs. Siebe Gorman & Co. Ltd., made flowmeters of the rotameter type to my specification for N_2O and O_2. After clinical trial these flowmeters were fitted to an anæsthetic apparatus made for me by Messrs. Allen and Hanburys in the same year. In 1932, following an inquiry from Mr. A. Charles King, the Rotameter Company offered to make rotameters for N_2O and O_2, calibrated for anæsthetic purposes. I am informed that the original correspondence between Mr. A. Charles King and the Rotameter Company is still in existence. While it is more than probable that rotameters were used in connexion with anæsthesia in Germany before 1932, it is thus apparent that in England the possibility of using them for anæsthetic purposes was mooted before 1937, and by Mr. A. Charles King.

Harley Street, W.1. I. W. MAGILL.

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS, M.P.

THE parliamentary week under review began with the declaration of war against Japan on Dec. 8, included a statement by the Prime Minister on the war situation, which is to be the subject of a debate, and was filled in with the second reading, committee stage and third reading of the National Service Bill No. 2. In the House of Lords the first and second readings of the bill took place and it will pass into law at once. Provision was made during the week for a debate on the allowances granted to the dependants of the men in the services. There was also a debate fixed on a Supplementary Vote of Credit for War Expenditure and for the passage of a special Consolidated Fund Bill through all its stages.

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The impact of such tremendous events as the extension of the war to the Far East and the Pacific Ocean, the virtual mobilisation of the whole nation for war purposes and the further drawing of astronomical sums of money for war expenditure are rather stunning in their effect on parliamentary practice. But criticism and the normal work of Parliament continue. The Prime Minister was able to clear up a little parliamentary storm which grew out of a misunderstanding of the effect of the new bill on M.P.s of the age-groups called on to serve. It has in fact been the recognised practice for some time to leave it to individual M.P.s to judge where their duty lies and whether they should serve in the forces or in Parliament. It has also been the practice that an M.P. in the forces wishing to be freed to devote himself to parliamentary duties is given this freedom. But some members were not aware of this as these rules and practices had not been embodied in a considered statement.

The Prime Minister made it clear that while it would not be appropriate to confer on members a statutory exemption from the obligations they share in common with everyone else they have also "the high duty" of service in the legislature. They are therefore given a free choice by virtue of their position as Members of Parliament and not as a favour.

* * *

Mr. Bevin as Minister of Labour in charge of the National Service Bill has done a long and difficult job effectively within the limits imposed by the form of the

bill, but there have been some breezes, one of which ruffled Mr. Henderson Stewart, who had made certain criticisms of the A.T.S. The words he used were, "We hear in this House and in the Lobbies the reports of medical officers about the conditions in the camps. There is not a constituency of which I have ever heard that has not this general but very definite impression that the A.T.S. is not the sort of Service to which a nice girl goes." Sir Percy Harris interjected "Hear, Hear," and Mr. Stewart continued, "My right hon. friend has apparently had the same experience," and called on the War Office to do something drastic and on Mr. Bevin to take drastic measures to remove "these unfortunate conditions." Mr. Bevin's reply to this was to say, "Why is there, concerning the A.T.S., the assumption that because women are drafted somewhere, immorality is bound to ensue? That is a lot of unutterable nonsense. . . . I say that the conduct of our young people during this war has been cleaner than in the whole history of our country."

Mr. Henderson Stewart at once protested, "I was not for one moment thinking about morals. I was thinking about the physical conditions in which they live. I think the morals are excellent." Mr. Henderson Stewart should have used plainer words about the lack of proper camp accommodation and dirt in the A.T.S. quarters and it is unfortunate that this suggestion of immorality among the A.T.S. was dragged into the debate through a misunderstanding. The facts are all against it. What is true and what needs improvement is the arrangements for the comfort of A.T.S., including lavatory and washing accommodation. But this is also true of the W.A.A.F.s—as Mr. Bevin indeed suggested. After this little fracas Mr. Bevin went on to speak of the provision of hostels and welfare arrangements but as these matters are outside the scope of the bill they could not be dealt with by amendment.

What did come out of the debate is a bill which will be an act by the time these words are in print. That act gives the Government very drastic powers over the whole population and especially over the age-groups 18–65. In the original discussion of the Maximum Effort resolution tabled by the Government, the Speaker described this as a de-facto "first reading" discussion of the bill. But it turned out to be nothing of the kind. The bill is limited to powers over persons. The provision of welfare and medical services is not touched and could not be discussed. They are left as far as legislation is concerned to some date in the future and there is uneasiness about them in the minds of members.

Another matter left out of the act—although adumbrated in the original Government resolution—is the position of young people from 16 to 18. These young people are to be looked after and directed as to their activities and there was some suggestion that they should be under the services. This suggestion was contested and the "direction" is to be through the Board of Education and voluntary youth societies. It is all rather vague but the situation is to be explored in a debate on the adjournment at an early date. But if youths of 16 are eligible for Home Guard duties and the Air Training Corps, it is hardly clear how the services can be kept out, or whether they should be kept out. The nation even at this stage has not got really used to total war. We don't like young people being drawn into the war. But perhaps the best we can do is to keep the control of any "direction" in the hands of the Minister of Education. And these directions will have to be carefully considered for it is on the shoulders of the youth of today will lie the heavy responsibilities of directing democratic opinion in the decade after the war.

FROM THE PRESS GALLERY

National Service Bill

IN the debate on this bill in the House of Commons it was pointed out, almost fearfully, that in conscripting our women we are "actually taking the initiative," for the Nazis have failed in the attempt, and noble Lords in the upper house thought the bill was "a tremendous compliment to democracy." Both houses were anxious that the Government should recognise that there would probably be a higher rate of sickness, breakdown and discharge among the men of the age-group 41–51 than among their juniors. Sir E. GREGG promised that their duties would be carefully allocated according to their medical grade, but it was generally felt that the Government should consider the pension claims of these men sympathetically.

Moving the second reading of the bill in the Commons Mr. E. BEVIN confessed that the human is the most awkward animal of all to handle, but proved himself adroit in the management of his colleagues. He gave an assurance that one woman doctor should be present at the medical examination of women. He also gave a pledge that if a man has been discharged on medical grounds he will not be called up again, but would be directed into industry. Mr. T. M. SEXTON urged that when women left home to work in another district they should register at once with a panel practitioner in the new area. Sir FRANCIS FREMANTLE called attention to the need to safeguard the water-supplies of the country. Water undertakings must be allowed to keep some of their skilled personnel. Dr. HADEN GUEST asked the minister to give some indication of the provision he would make for hygienic and medical supervision in the new factories. There was a shortage of medical manpower, and they would not get what they wanted unless they had the whole medical services of the country pooled. Mr. BEVIN replied that he could not deal with the nationalisation of the medical services by this bill; they were constantly being expanded and he had early made a great innovation by introducing a compulsory medical service in industry, which now included nursing. Mr. R. DAVIES said the bill had as its background the population problem, and asked what effect the conscription of women would have on the birth-rate.

In the debate in the Lords on Dec. 12, Lord MOYNE was able to reassure Lord GREVILLE about the provision of domestic staff for hospitals. Last week Lord Greville complained that these workers were steadily seeping away. Now an order is to be made laying down that no woman between 20 and 30 working in a vital industry—which includes hospital work—may change her employment except with the approval of the Minister of Labour.

War-time Nurseries

At the cinema the news reel informs us that we "live in the presence of history." Against this background the question "What to do with the children" may seem trivial. But as Lord NATHAN pointed out in the House of Lords on Dec. 9, when asking the Government what provision they were making for war-time nurseries, the need for an answer is urgent if we are to make full use of our woman-power. Industry is dependent on what might be called immobile mothers, and it is essential to morale that women should have confidence that the arrangements made for their children are adequate. Minders are no doubt all very well, but he reminded his peers that children under five are brittle. It had been stated that by the early part of next year 500 nurseries would be open, taking an average of 40 children each, or 20,000 in all. But Lord Nathan suggested and he believed that it was an understatement that 200,000 children would have to be provided for, and provided for at night as well as in the day. And what was to be done about the children between five and fourteen during school holidays when their mothers were at work? The Government were confronted with a great social problem. Upon the right solution depended the health and happiness of the generation for which we were fighting.

Lord SNELL acknowledged the Government's responsibility for what was a human as well as an industrial problem. He did not suggest that the figures given by Lord Nathan were exaggerated, because no-one at present could estimate what the intake of married women into industry would be; but the Government's answer was that first it was necessary to observe the rate of intake and then to try to provide sufficient nurseries to meet the demand, but instructions had been given to local authorities to prepare for the expected need and to be ready for quick development. The Ministry of Health, the Ministry of Labour and the Board of Education were collaborating closely in this matter and so were the local maternity and child welfare and the education authorities. At the end of November 194 nurseries were in operation, and a further 209 approved, but not yet in full action, providing for something over 15,000 children. A further 264 were in active preparation and

the Government felt that this programme was fairly satisfactory. But Lord NATHAN said that neither he nor the other Labour Lords could agree. It might be sound policy to observe the intake of married women into industry and then take action if this matter were being dealt with as one of child welfare in a scheme of social readjustment. But the problem was to get the mothers into industry, and the provision of accommodation for the children is the inescapable precedent for these women going into industry at all. He therefore hoped that the Government would ensure that steps were taken in advance of the intake and did not lag behind it.

QUESTION TIME

Inspection of Mental Defectives

Mr. H. C. CHARLETON asked the Minister of Health the number of visits made by the commissioners and inspectors of the Board of Control to mental defectives under statutory guardianship in the administrative area of the county of London during each of the 12 months ended michaelmas in the years 1939 and 1940.—Mr. E. BROWN replied: The numbers of visits by commissioners were 98 and 0 respectively, and the number of visits by inspectors were 35 and 4 respectively. Article 83 of the Mental Deficiency Regulations, 1935, permits but does not require visits by commissioners or inspectors and arrangements have been made to visit all cases placed under guardianship in the years 1940 and 1941 and establishments where there are a number of mental defectives under care. I am informed by the London County Council that their officers have duly made the visits prescribed by Article 86 of the regulations.—Mr. CHARLETON: Is the Minister not aware that the figures he has given reveal a serious evasion of duty by the Board of Control? How can the commissioners carry out their duties to these unfortunate people if they do not see them and understand their condition? Is he aware that there is evidence that some have not been visited for a number of years? Is he aware that the figures in 1939 should have been in the neighbourhood of 550 and in the next year 500?—Mr. BROWN: The commissioners were working under great difficulty and as he knows the inspectorate has other duties to perform in addition.—Mr. CHARLETON: Does the Minister not see that the first duty was during a prewar period when there were no difficulties?

National Wheatmeal Loaf

Sir ERNEST GRAHAM-LITTLE asked the Parliamentary Secretary to the Ministry of Food to what proportion of the population the white loaf, fortified in accordance with the undertaking given in July, 1940, was now supplied; what proportion of the consumption of the national wheatmeal loaf now bore to the total consumption of bread in this country; what had been the expenditure to date by the ministry in advertising the national wheatmeal loaf, and whether the Ministry had now abandoned or diminished such advertising.—Major G. LLOYD GEORGE replied: Figures relating to the proportion of the population to whom the fortified white loaf is now supplied are not available, but approximately 25% of the white bread and flour consumed in the United Kingdom is now being fortified with vitamin B_1. It is estimated that 7% of the bread consumed is in the form of the national wheatmeal loaf. The expenditure to date on advertising national wheatmeal is £29,000. The advertising has included many thousands of posters which are displayed in all parts of the country. The use of national wheatmeal bread and flour forms an important subject in the ministry's food advice service to housewives. The ministry has not abandoned this advertising but there is a wide range of subjects to be covered in the space available for the ministry's; consequently there are periods during which there is space for no more than occasional mention of wheatmeal in advertisements primarily devoted to other subjects.

X-ray Examination of Recruits

Sir FRANCIS FREMANTLE asked the Minister of Labour whether he had considered the adoption by medical boards of X-ray examination for tuberculosis of every recruit, in the light of American experience, and in the interest of those found to be affected and of Exchequer liabilities.—Mr. ERNEST BEVIN replied: This suggestion was fully considered last year by the Medical Advisory Committee under the chairmanship of Lord Horder, and the committee decided that its adoption was impracticable. I am advised that this is still the case.—Sir F. FREMANTLE: Can the Minister explain why it was found practicable in America but not here?—Mr. BEVIN: I understand that at the time it was a question of preparing a complete supply of equipment.

Increase in Juvenile Delinquency

The number of persons under 17 years of age annually found guilty of offences in England and Wales has increased since the war by about 30%. (Mr. H. MORRISON replying to Mr. D. L. LIPSON.)

Certificates in War-time

In answer to a question Mr. BROWN said: I have been asked by the British Medical Association to consider whether steps can be taken to reduce the demands made on the medical profession for certificates in connexion with war activities. A conference took place between representatives of Government departments and of the association at which the whole matter is now being considered by the departments individually with the object of reducing to a minimum the number of purposes for which medical certificates are to be required.

Suspension of Dudley M.O.H.

Captain G. S. ELLISTON asked the Minister whether he proposed to intervene on behalf of the M.O.H. for Dudley who had been suspended for the duration of the war because he had registered as a conscientious objector, as permitted by the Military Service Act.—Mr. BROWN replied: The appointment, dismissal or suspension of the M.O.H. of a county borough does not require my approval and I have no authority to intervene between the council and their officers in this matter.

Diphtheria and Immunisation

Sir F. FREMANTLE asked the Minister whether he had any statistics of the results of immunisation against diphtheria in New York, Chicago and Toronto as compared with London.—Mr. BROWN replied: In New York City, since large-scale immunisation of children began in 1929, diphtheria has steadily decreased from an average of about 10,000 cases a year during 1920–29 to just over 400 cases in 1940, in relation to a population of over 7 million. Information about Chicago is not readily available. In Toronto in the five years during 1933–37 there were no more than 209 cases of diphtheria in all. In two of these years, 1934 and 1937, there was not a single death, while in 1940 there was neither a notification nor a death. In the county of London, with a population of about 4 million, notifications of diphtheria in recent years have averaged close on 8000 cases a year.

Committee on Nurses Salaries

In reply to a question from Miss M. LLOYD GEORGE Mr. BROWN said: The committee on nurses salaries held its first meeting on Nov. 27. It is my intention that the committee's scope should extend to nurses possessing or in training for the certificate of the Tuberculosis Association, and that it should also extend to health visitors. Before the scope is so extended it may be necessary to make some adjustments in the committee. I have decided to set up a separate committee to draw up agreed scales of salaries for midwives on a national basis. Lord Rushcliffe will act as chairman of the committee for midwives as well as of that for nurses. Some nurses and midwives posts involve the practice both of nursing and of midwifery and I shall request the committee to consult together before making recommendations about these overlapping matters.

Leprosy in the West Indies

Mr. G. H. HALL in reply to a question from Dr. H. B. MORGAN gave the following table setting out the incidence of leprosy in the British West Indies.

Colony	Year	New cases	Total cases	Population
Bahamas	1940	3	17	70,332
Barbados	1939	5	63	193,082
Jamaica	1939	N.S.	249	1,195,465
Turks and Caicos ..	1938	2	5	5300
Antigua	1940	N.S.	6	36,073
St. Kitts	1939	3	59	37,994
Montserrat	1939	N.S.	N.S.	13,541
Virgin Islands	1940	N.S.	N.S.	6135
Trinidad and Tobago ..	1939	77	377	473,455
St. Lucia	1939	5	29	69,737
St. Vincent	1940	0	18	61,421
Grenada	1939	0	12	90,085
Dominica	1940	3	17	52,738
Bermuda		0	0	30,814
British Guiana ..	1939	45	565	341,237
British Honduras ..		N.S.	N.S.	57,767

N.S.=Not stated.

Obituary

FRANCIS HENRY MOSSE

M.R.C.P.

EARLY this year Dr. Mosse, who had been working as a medical missionary in China since 1920, fell ill with tuberculosis and was sent to America for treatment. He seemed to be making good progress and his death on Dec. 6 after an operation was unexpected. Robin Mosse, as his friends called him, was the son of the Rev. E. H. Mosse, vicar of St. Paul's, Covent Garden. He was educated at King's School, Canterbury, and Trinity College, Oxford, and qualified from King's College Hospital in 1913. During the last war he served as captain in the R.A.M.C. in Egypt and Palestine and was with General Allenby's forces at the capture of Jerusalem. His heart was set on medical missionary work, and after taking the M.R.C.P. he sailed for China, under the S.P.G., to take up the post of physician at the Cheloo Christian University at Shantung, in North China. Here for twenty years Mosse trained young Chinese men and women—"A picked group of the finest students in the world," he called them. He counted himself "the happiest man in Asia" to be allowed to serve them, and he worked with them in refugee camps in times of flood and famine, as well as in the lecture halls and wards of Cheloo Hospital. After the Japanese occupation of North China most of the 4000 students at Cheloo trekked west to free China, but the hospital remained, and Dr. Mosse stayed with it. He leaves a widow and two daughters who are in the United States.

ELWIN H. T. NASH

M.R.C.P., D.P.H.

THE loss of Elwin Nash brings a flood of memories. Nash was no ordinary official. The fire of the enthusiast burned brighter in his eye as each year added to his age. It was in fact in the later years of his life that he really found his feet and became a pioneer in public health.

Cromwell Studios, Hounslow

One of the particular qualities for which we admired him was his practical mastery of the improvements he advocated. Years ago he came to the conclusion that many of the nutritional problems of the nation would be solved if it were taught to buy better and to cook more skilfully. He wrote a book on the subject and sold it at a price which the poorest could pay. And before writing it he went into the kitchen and became a first-class cook himself. For him armchair administration did not exist: "I attend at one welfare clinic and at one school clinic regularly every week." To know that a thing was good and needed in public health was sufficient to awaken his determination that his district should pioneer. He was one of the first to commence immunisation against diphtheria on a large municipal scale; the records he kept were meticulously accurate. One day a dentist spoke to him of the disastrous effects in appearance and in health that could arise unless children's teeth were carefully regulated. What was good enough for Park Lane was good enough for Heston and Isleworth, and he started a clinic where the poorest in his district could obtain orthodontic treatment. Elwin Nash just could not let disease go untreated. He gave a lecture on myxœdema at the Society of M.O.H.'s and confessed how he had secured his patients. "I saw them in the bus, I saw them in the train and in the street. I stopped them and secured treatment for them; if I offended against ethical canons, I place myself without reserve in the hands of you who are my colleagues and friends." He was an enthusiast and a fighter. Yet big, burly and determined, no-one had a gentler touch with children; they trusted him and realised he would look after them as individuals—just as in the bigger realm of public health his council trusted him to look after them as a community.

D. H. G.

Elwin Harral Thomas Nash was born in 1872 in Guernsey, the eldest son of Joseph Nash, R.I. He was educated at St. Paul's School and St. Thomas's Hospital, qualifying in 1896, after which he filled a series of house-appointments in London and the Home Counties and assisted in several departments at St. Thomas's. Then for a while he was in general practice at Accrington, but after taking the D.P.H. at Manchester and holding a public-health research scholarship he went to Derby to assume charge of the isolation hospital, became assistant M.O.H. there and then M.O.H. of Wimbledon, finally ending up at Heston and Isleworth. In 1938 just after his retirement the society of M.O.H.'s elected him president, and at their annual banquet he foretold amazing developments in the growing association between practitioner and health officer which he did much himself to foster. Many of the high lights of his work have been noticed in these columns, among the more recent an early venture (1934) in the use of adult serum to modify measles in fever hospital contacts, a forecast of planned obstetric practice (1937), and some indication of the aim and purpose of "Dr. Nash's Cookery Book." In 1899 he married Mary Monica Oldershaw, who survives him with four sons and a daughter.

ERNEST JOHN FRANK HINDE

M.R.C.S.; CAPTAIN R.A.M.C.

IN a recent casualty list it is announced that Captain E. J. F. Hinde has died of wounds. He was born in 1912, the eldest son of Dr. E. B. Hinde of Norwich, and was educated at Gresham's, and Emmanuel College, Cambridge, where he won his athletic colours. At Guy's he played hockey for the hospital and occasionally ran, but here his keenness for his work left him little leisure. He qualified in 1938 and the following year obtained a house-appointment at Guy's, but soon after the outbreak of war he resigned to join the R.A.M.C. He served at first with the East Anglian field ambulance, as his father had done in the last war, and afterwards with another field ambulance. Later he volunteered for foreign service, and it was on his way abroad that he met his death at sea. He married Miss Norah Steeds in 1940.

Polyfoto

ANTONY FLEMING BALDWYN

M.B. LOND.; FLYING-OFFICER R.A.F.

Flying-Officer Baldwyn has been reported missing but is presumed to have lost his life on active service in the Middle East. He was the eldest son of the late Captain C. F. Baldwyn. He entered St. Bartholomew's Hospital in 1935 and took his London degree last year, at the age of twenty-two, and joined the R.A.F. after six months as house-physician at the base hospital of the Bart's sector. One of his friends writes: Baldwyn showed aptitude for learning new things quickly, and he applied his knowledge for his patients. He was good at most games and could sail any sort of boat.

DAVID ROBERTSON TAYLOR

B.A. CAMB., M.B. EDIN., D.P.H.

Dr. Taylor, who died at his home in Belfast on Nov. 8, was the only surviving son of the Rev. D. A. Taylor, D.D., of the Presbyterian Church in Ireland. Born in 1870, Taylor was educated at the Royal Belfast Academical Institution and Cambridge University where he took his degree in 1901. He proceeded to Edinburgh University and graduated M.B. in 1906. After service in the R.A.M.C. he obtained the D.P.H. at the Queen's University of Belfast in 1918. He was a medical referee under the National Health Insurance scheme in Northern Ireland, and was engaged in general practice until the day before his death. In 1903 he played rugby for Ireland, but cricket was his enduring passion and he played for Gentlemen of Ireland in 1924. An accomplished musician he was an enthusiastic member of the British Music Society of Northern Ireland. David

Taylor's qualities of simplicity and modesty won him many friends and his unfailing gentleness and kindness were valued by his patients. He leaves his widow with two daughters.

DERMOT HARRY TUTHILL DUGGAN

M.D. DUBL. ; SURGEON LIEUTENANT R.N.V.R.

Surgeon Lieutenant Duggan, who was reported missing in August 1940, is now posted as missing, believed killed in action. He was serving on H.M.S. *Ardent* which took part in convoying troops to Narvik and was lost in battle off the coast of Norway in June, 1940. He was the only surviving son of the late Captain George Grant Duggan, who was killed at Gallipoli in 1915. Duggan was educated at the Imperial Service College, Windsor, and entered Trinity College, Dublin, in 1929. He graduated in arts in 1933, and in medicine in 1935. He was an active member of the Dublin University harriers, of which his father had once been captain. He passed his examinations punctually, and after qualifying in the minimum time he held house-appointments at the Fermanagh County Hospital, Enniskillen, and at the Kent County Ophthalmic and Aural Hospital, Maidstone. He also travelled to New Zealand as surgeon on the s.s. *Durham*. In 1939 he was granted his M.D. for a thesis on chemotherapy in acute ear disease which was later published in the *Irish Journal of Medical Science*.

Medical News

Royal College of Surgeons of England

At a meeting of the council of the college held on Dec. 11, with Sir Alfred Webb-Johnson, the president, in the chair, Mr. Seymour Barling was reappointed representative on the court of governors of Birmingham University, Mr. L. E. C. Norbury as representative on the Central Council for District Nursing in London.

Diplomas of fellowship were granted to the following candidates :—

E. O. Harris, M.B. Lond. ; H. E. Blake, L.R.C.P. ; P. M. G. Russell, M.B. Lond. ; V. A. J. Swain, L.R.C.P. ; T. L. S. Baynes, M.D. Lond. ; B. G. A. Lilwall, M.B. Lond. ; E. W. O. Adkins, M.B. Camb. ; G. A. Fairlie-Clarke, M.B. Lond., R.N. ; A. R. Leask, L.R.C.P. ; S. I. Green, M.B. Lond. ; H. J. Richards, M.B. Lond. ; James Moroney, M.B. Lpool ; G. M. Müller, M.B. Lond. ; A. G. Apley, M.B. Lond. ; J. B. Kinmouth, M.B. Lond. ; D. A. J. Ebrill, M.B. Lond. ; H. E. Hobbs, M.B. Lond. ; W. H. Weston, L.R.C.P. ; E. T. Taylor, B.M. Oxfd ; L. B. Aitken, M.B. N.Z. ; H. B. Boctor, M.B. Cairo ; C. H. Cullen, M.B. Belf. ; Stephen Eisenhammer, M.B. Edin. ; J. D. Gray, M.B. Sheff. ; C. G. D. Halstead, M.B. N.Z. ; J. N. Nish, M.B. Melb. ; C. M. Ley, M.B. Melb. ; William Parke, M.B. Lpool ; J. J. Richmond, M.B. Melb. ; W. E. Springford, M.B. Lond. ; and Norman Waddle, M.B. N.Z.

Diplomas in anæsthetics were granted, jointly with the Royal College of Physicians, to the following :—

J. B. Adams, J. H. Crawford, H. de L. N. Davis, D. C. Devitt, R. R. Dickson, J. K. A. Dorman, Henry Edwards, H. R. W. Franklin, Ysobel M. Garland, E. F. Gleadow, T. C. Gray, P. S. A. Heyworth, Werner Kupfermann, C. B. Lewis, A. M. McKinlay, J. V. Mitchell, L. G. Morrison, G. B. Oliver, Joseph Patterson, George Quayle, G. M. Rose, Enid B. Roulston, R. D. Scott, R. P. W. Shackleton, A. A. Shein, Janet Todd, E. C. Whitehall-Cooke, Joyce Worthington, and A. M. Young.

Royal College of Physicians of Edinburgh

At the annual meeting of the college on Dec. 4, Prof. Charles McNeil was re-elected president and the following council was elected for the coming year : Dr. R. B. Campbell, Dr. L. H. F. Thatcher, Prof. D. M. Lyon, Dr. A. G. Ritchie, Prof. L. S. P. Davidson and Dr. A. Rae Gilchrist. Professor Lyon was nominated vice-president.

First Polish Graduates in Edinburgh

There was a historic addition this year to the small winter graduation at Edinburgh University on Dec. 12, when the first degrees were conferred on students of the Polish School of Medicine at the university. Sir Thomas Holland, the vice-chancellor, presided and the degrees were conferred with the authority of the Polish government by Prof. A. T. Jurasz, dean of the Polish faculty of medicine. The new Polish graduates were Miss Jadwiga Mickiewicz of Warsaw, Second Lieutenant Stanislaw Schta, Asp. Wladyslaw Kazimierz Gatuszka and Asp. Ferdinand Solich, all of Cracow.

22nd General Hospital R.A.M.C.

The fifth week-end course in war medicine will he held at this hospital on Jan. 3 and 4. The visiting lecturer at this course will be Mr. H. Morriston-Davies.

Medical Honours

The M.B.E. has been awarded to Dr. W. L. M. Bigby and Dr. John Findlay.

Dr. Bigby, who is assistant medical officer for civil defence at Southampton, has worked long hours helping to extricate trapped people and has several times entered wrecked buildings to relieve the suffering of the injured.

Dr. Findlay, who is in charge of a first-aid post at Peterhead, was thrown to the floor and injured when a bomb burst, but at grave risk to himself he crawled under debris and gave injections to three casualties.

Posthumous Honour

The Royal Meteorological Society has awarded the Symons gold medal for 1942 to Dr. J. S. Owens, whose death was recorded in our columns last week.

King Edward's Hospital Fund

This year the fund is again distributing £300,000 among the voluntary hospitals of London. The fund is now proposing, with the help of the Nuffield Trust, to extend the work of its nursing recruitment service to provincial training schools.

West Ham Practitioners Coördinating Committee

The discussion group of this society will meet for the first time on Tuesday, Dec. 23 at 2.30 P.M., at the Y.M.C.A. Hall, Woodgrange Road, Forest Gate, E.7, to consider the extension of the panel system versus an all-out state medical service. Dr. A. V. S. Davies will speak in favour of an extension of the panel system, and Dr. R. N. Brandwood will advocate a state medical service. Practitioners from adjoining areas are invited to attend.

Births, Marriages and Deaths

BIRTHS

ARTHUR.—On Dec. 4, at Wolverhampton, the wife of Squadron-Leader Hugh Arthur, F.R.C.S.E., R.A.F.V.R.—a daughter.

BONNELLA.—On Dec. 11, at Oxford, to Dr. Gertrude Bonnella (*née* Afoumado), wife of F. George Bonnella, of Chinnor—a daughter.

BOLAM.—On Dec. 7, at Gosforth, Newcastle-on-Tyne, the wife of Dr. Mason Bolam—a daughter.

BRYAN.—On Dec. 4, at Plumstead, Capetown, the wife of Dr. T. B. L. Bryan—a son.

DANIELS.—On Dec. 13, at Grantham, the wife of Dr. Marc Daniels—a daughter.

LUNN.—On Dec. 12, at Guildford, the wife of Captain H. Fletcher Lunn, R.A.M.C.—a daughter.

RIORDAN.—On Dec. 7, at Newcastle-on-Tyne, the wife of Captain T. P. Riordan, M.B., R.A.M.C.—a daughter.

SODDY.—On Dec. 13, at Cambridge, the wife of Temp. Major Kenneth Soddy, R.A.M.C.—a daughter.

THOMAS.—On Dec. 3, at York, the wife of Dr. René Thomas—a daughter.

MARRIAGES

CUDDIGAN—REDFERN.—On Dec. 10, at Ripley, Simon Thomas Cuddigan, M.B., to Betty Redfern.

DUFFY—BOWERS.—On Nov. 29, at Chichester, Charles Allan Gavan Duffy, M.R.C.P., captain, R.A.M.C., to Margaret Marianne Lucy Bowers.

ELLIOT—HICKS.—On Dec. 9, at Blockley, Glos., Thomas Elliot Elliot, F.R.C.S.E., major, R.A.M.C., to Mary Catherine Hicks.

DEATHS

CARMICHAEL.—On Dec. 7, at Lahore, John Carmichael, F.R.C.S.I., lieut.-colonel, R.A.M.C., retd., of Srinagar, Kashmir, aged 87.

MOORE.—William David Moore, M.B. Edin., captain, R.A.M.C., aged 43.

MORTON.—On Dec. 10, at Glasgow, Hugh Morton, M.D. Glasg., F.R.F.P.S.

RUDOLF.—On Nov. 2, in Toronto, Robert Dawson Rudolf, C.B.E., M.D. Edin., F.R.C.P.

SOUTH.—On Dec. 7, at Banbridge, N. Ireland, Frank Montague Wilson South, M.R.C.S., of Peckham.

Appointments

CAMERON, DONALD, M.B. Edin. : examining factory surgeon for Plymouth East.

CLEVELAND, A. J., M.D. Lond., F.R.C.P. : medical referee for Downham Market, East Dereham, Fakenham, Holt, King's Lynn, North Walsham, Norwich, Swaffham, Thetford and Wymondham.

LLOYD, ALEXANDRA, M.B. Glasg. : examining factory surgeon for Stewarton, Ayr.

MCCLATCHEY, S. J., M.B. Belf., D.P.H., : temp. asst. M.O.H. for Kent.

WILLIAMS, MARJORIE, M.B. Birm. : temp. asst. M.O. (maternity and child welfare) for Northampton.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

Notes, Comments and Abstracts

THE STUDENT ON HIS STATE

THE British Medical Students Association, which is the only national organisation claiming to represent medical students, and has the status of a faculty committee of the National Union of Students, has been asked by the Medical Planning Commission to draw up a memorandum on the reform of the medical curriculum. In order that opinion may be as nearly unanimous as possible when the memorandum is drafted, the B.M.S.A. suggest that special committees should be set up in the different medical schools to organise wide discussion and send in reports. To make this easier, the B.M.S.A. have drawn up an outline,[1] summarised here, of some of the points which it is hoped to cover.

The emphasis, in medical education, should be on the maintenance of health, and the prevention of disease rather than on cure. No suitable student should be debarred from medicine for financial reasons, and all medical schools should be open equally to men and women. A state medical examination might replace the varying examination standards now existing. More full-time salaried teachers should be appointed. Vacations for students might be reduced in the preclinical years, but should be at least six weeks annually during the clinical years.

The premedical course should provide a broad scientific basis. Thus, biology should be taught as a general study of life rather than as a detailed study of a few forms representing specialised ends of evolution; chemistry and physics should be taught with more emphasis on general principles, and the course might be widened to include the elements of sociology, anthropology and genetics. In the preclinical years there should be more emphasis on scientific and experimental method; the teaching of anatomy and physiology should be coördinated, and there should be more attention to the developmental approach and to surface anatomy; clinical cases should be used to illustrate anatomical and physiological principles.

During the clinical years the teaching of hygiene should be incorporated in a fuller course on preventive medicine, and psychological medicine should be taught more thoroughly. A course in general pathology should be completed by the end of the first three months of clinical work. Clinical instruction should be organised for small groups rather than large classes, and the basic teaching should be in the form of tutorials. If attendance at them is compulsory, means must be devised to ensure that the standard of formal lectures is maintained. The value of the clinical material in hospitals under the sector and regional schemes is appreciated, and the aim after the war should be to extend still further the number of hospitals in which experience can be gained. Finally, a hospital education is not felt to be enough; students should get experience of general practice either by a system of apprenticeship to selected general practitioners or by a dispensary system similar to that in operation at some Scottish medical schools.

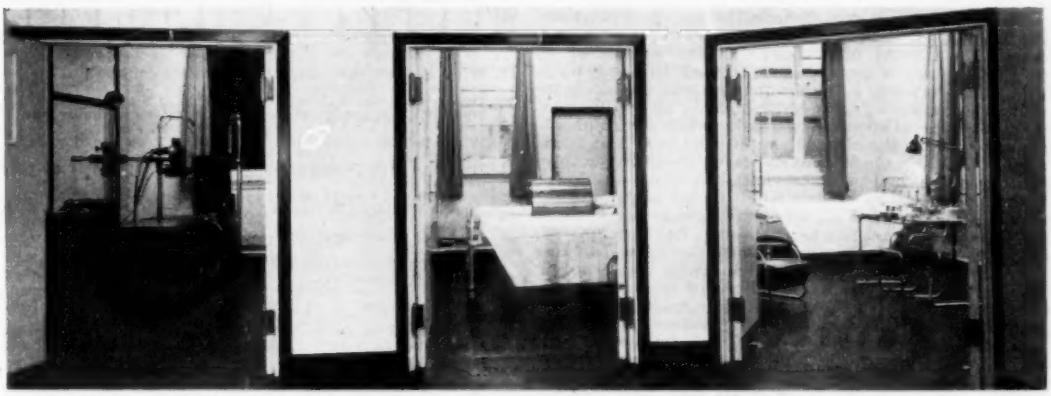
The B.M.S.A. suggest that members of the various medical schools, besides sending in additions to or criticisms of the outline, should review the system of education at their own schools, indicating the hours spent at lectures and ward rounds, in the wards and in the outpatient departments, and giving their experience of the value of work in base and evacuation hospitals; and should send in a detailed account of the reforms they would like to see in their own schools.

1. Students and Medical Education. 2*d*. Copies may be obtained from the hon. secretary, B.M.S.A., 3, King's Parade, Cambridge.

THE DIABETIC FRONT

THE diabetic clinic of University College Hospital has published a handbook giving its war-time diets and instructions for diabetic patients (Diabetes in Wartime. London: H. K. Lewis and Co. 1*s*.). Prof. H. P. Himsworth's hand is evident in the book, although his name does not appear. The booklet sets out the rules of the Food Ministry dealing with extra and substitute rations for diabetics, and gives practical advice on special identity cards and discs, precautions against shortage of insulin and interruption of routine by air-raids, evacuation and the like. The usual advice to send for medical help promptly when a diabetic develops a complicating illness, is emphasised and the patient is told what to do about food and insulin if the doctor is delayed. The diets are adapted to the present rationing scheme, and range by steps of 250 calories from 1500 to 2500 calories. Two skeleton diets are given at each level and a substantial list of alternatives is added at the end. The content of these diets in calcium and vitamins A, B_1, and C is well above the accepted standard requirements. A 1000-calorie diet for use during recovery from coma and another for the temporary invalid or convalescent are also included. The book ends with half a dozen recipes for puddings and a ruled sheet on which the patient can keep notes of his diet, insulin dosage and weight. There is only one criticism: the diets aim at a high standard of precision in weighing and no alternative household measures are given for those patients who cannot be expected to weigh "an extra ¼ oz. bread and an extra ½ oz. butter."

THE AUSTIN MEDICAL DEPARTMENT



The X-ray, resuscitation and treatment rooms opened by Sir David Munro at the Austin works, Birmingham on Dec. 3. The new department also contains treatment rooms for men and women, a bathroom, an examination room, a consulting room, a laboratory, doctors' rooms and an office for clerical staff and record filing; it is staffed by three doctors and a nurse with experience of radiography, and serves the 25,000–30,000 workers employed. The medical officers will investigate health problems and occupational illness, give immediate treatment for major and minor injuries and illness, undertake medical examinations, grade a man's work to his capacity after sickness, and supervise the nurses in charge of ambulance rooms throughout the works.

HOW IT WAS DONE

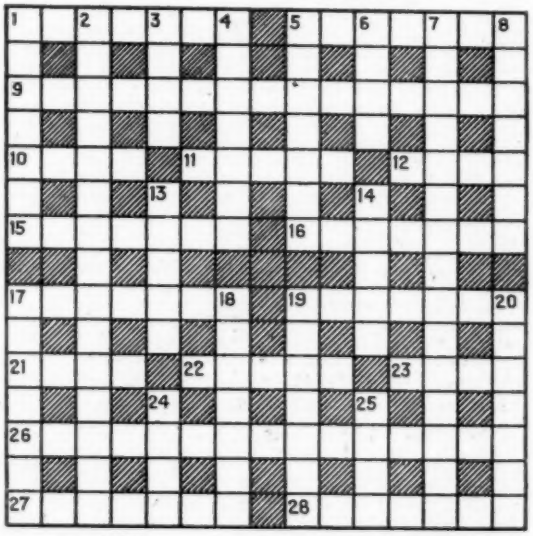
NINE-TENTHS of general practice today is the care of panel patients and their dependants; but in a pleasant chatty book[1] Dr. E. A. Barton recalls the conduct of medicine in the spacious manner now passing away—of general practice limited to the well-to-do in an exclusive neighbourhood. Perhaps this is the very reason why it makes such good reading either for the doctor or the layman: we rub elbows with great men and women of the past and we are not introduced to any social problems of the present. That Dr. Barton is a man of great age is evident; he was a fellow student of Rose Bradford and he once went to a dance in Hampton Court seated on the knees of his aunt in a sedan chair. But his chapter on quacks will be of value to the contemporary layman, and that on medical etiquette to the medical profession. And in connexion with etiquette he tells a story—proving that though medicine and practice alter human nature remains the same—about a man of highly strung neurotic temperament, who explained, with pantomime, that he endured the agonies of the damned in the abdomen. "His appetite was excellent, he snored like a trombone—so his suffering wife told me—eight hours every night without turning, but he suffered intensely. There was nothing very much wrong with him physically: but when a man is so ill as to think that he is ill when he is not ill, then he is very ill." This man Dr. Barton saved, not from the abdominal surgeon, but from an abdominal physician, a Dr. X who saw nothing but duodenal ulcer in every stomach-ache; for twenty years after this incident to the time of his death the patient "ate and drank anything, slept like the dead, but suffered intensely if anybody asked after his pains." But then Dr. Barton belongs to the days when it was considered the function of the doctor to protect not only the body, but also the pocket of his patient from the consultant who "conscientiously and seriously" thought as Dr. X did. With the development of investigations and operations, not to mention psychotherapy, the G.P.'s task is harder in this respect than it was forty years ago. This book will make an excellent New Year present to a doctor, his relations, acquaintances and patients.

TEAM OF TWO

BREAST-FEEDING is admitted to be an important process, whether from the viewpoint of nutrition or psychology. The psycho-analyst regards suckling as the child's first erotic experience and one which will leave traces later on his character and personality. Dr. Merrell P. Middlemore, whose work ceased with her untimely death, wrote her last book ("The Nursing Couple." London: Hamish Hamilton Medical Books. Pp. 191. 7*s.* 6*d.*) as an orthodox Freudian analyst, but its chief value may well lie in the detached observations of breast feeding which it records and in her original comments. Careful observations of the behaviour of the suckling are scarce, as Dr. Edward Glover points out in his foreword. Dr. Middlemore was fortunate in having the chance to carry out her study in the lying-in wards of a general hospital, and though this environment does not capture the atmosphere of the home it at least ensures that breast-feeding is conducted favourably from the nutritional point of view, and thus cuts down psychological factors arising from faulty technique in feeding. She watched an unselected group of mothers and infants during feeding, making no attempt at statistical study but recording clinical facts; and found that there are trends in feeding behaviour which occur irrespective of the success or failure of the mother to give adequate nourishment. She distinguished between satisfied and unsatisfied sucklings, regarding as satisfied those who sucked steadily by the fourth day of life and took 2–3 oz. at most feeds. Those who were unsatisfied she grouped as "excited ineffective sucklings" and "inert sucklings"; the inert group were further subdivided into the "simply inert" and the "irritably inert." Excited ineffective sucklings were fussy, either taking the nipple but failing to hold it, or refusing it repeatedly for days, or changing their behaviour at every feed. Sucklings who were simply inert were lazy from the start and failed to suck for some days; the irritably inert began actively but with many capricious tricks and became drowsy after three or four days, showing a progressive distaste for the breast, which had obviously failed to satisfy them. Recovery from such inertia might take place at a single satisfying feed, or only gradually, as the child began to take pleasure in feeding. Dr. Middlemore speculated on the causes of irritable inertia; it might, of course, derive from a defect in the nervous arc of the sucking reflex, but is far more likely to develop from faulty conditioning. Clumsiness in putting the child to the breast, or rough handling, may associate sucking with discomfort in his mind. It is characteristic of this group of infants that when they pass from the restless to the inert stage they adopt a peculiar immobility which Dr. Middlemore likened to the defensive immobility of some hunted animals; it might, she thought, be an example of an instinctive fear reaction—in this case fear of rough handling—used inappropriately, so that it worked to the child's disadvantage. Further analysis of her cases, and other studies on the same lines, may throw as much light on feeding difficulties as on mental and psychological development.

1. A Doctor Remembers. E. A. Barton, M.R.C.S. London: Seeley, Service and Co. Pp. 287. 12*s.* 6*d.*

LANCET CROSSWORD



ACROSS

1. What the cell does during mitosis (7).
5. Deadly ace on it (7).
9. Does it show the mind at work? (15).
10. Where you are fed up by the Italians (4).
11. It takes a horse to make the opening move (5).
12. Give one and lose 45 (4).
15. The Man Behind the Lancet (7).
16. Oil a bat and show detachment (7).
17. Looks after lame ducks and is no lamer herself (7).
19. This is hard—as the man said who found it in his pants (7).
21. A hundred more would make a bed for a consulting room (7).
22. South of a Thames anchorage heard in the shelter (5).
23. Beheaded, where the boss put the typist; the whole, the result (4).
26. Teutonic version of a funereal diagnosis (two words, 3, 7).
27. "Eggs and Milk? Sauce!" said Lord Woolton (7).
28. "F" morsed disfigures (7).

DOWN

1. Home dairies (7)
2. Yeast in the wrong place (15).
3. A vestment helps one to contend (4).
4. Old Moore or Orion? (Two words, 4, 3).
5. The very reverse of polydipsia (7).
6. Bear with the French (4).
7. Wrapped in an — — of mystery, like the hero of an old melodrama (Two words, 12, 3).
8. Red head for blast (7).
13. This — averages to the statistician, and — income to the economist, but it just — — to me (5).
14. Physical training round the field brings all into the fold (5).
17. This movement is achieved by putting a false foot foremost (7).
18. New breaks the rush (7).
19. Was the candidate who just scraped through? (7).
20. Victorian physicians who were wore (7).
24. Add it to your list for a dreamer (4).
25. Back quickly (4).

The solution of the crossword will be given next week.

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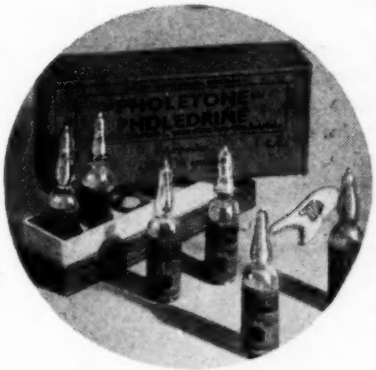

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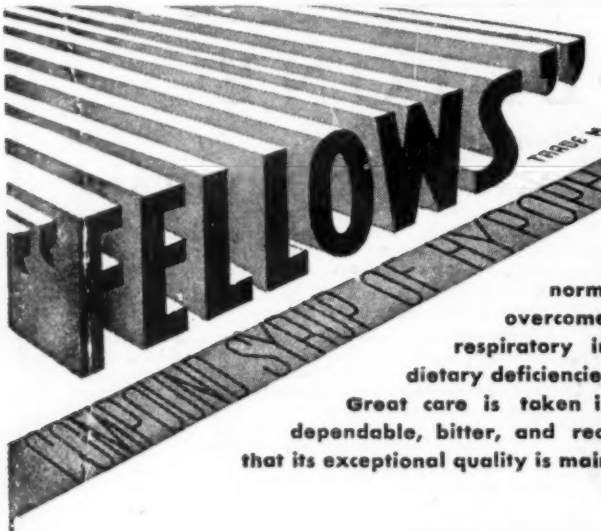

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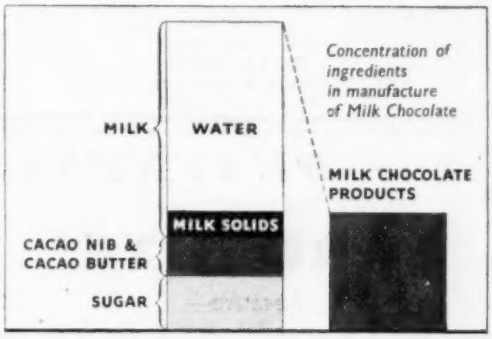

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L. M. S. S. A.

FINAL EXAMINATION: SURGERY, January 12th, February 9th, March 9th, 1942; MEDICINE, January 19th, February 16th, March 16th, 1942; MIDWIFERY, January 20th, February 17th, March 17th, 1942.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

Examining Board in England

BY THE
ROYAL COLLEGE OF PHYSICIANS OF LONDON
AND THE
ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Notice is hereby given that the following Examinations will commence on the dates stated below:—

DIPLOMA IN PUBLIC HEALTH,
MONDAY, 12TH JANUARY.
DIPLOMA IN MEDICAL RADIOLOGY,
MONDAY, 12TH JANUARY.

Candidates who have fulfilled the necessary conditions, and who desire to present themselves for examination, must give notice in writing to the Secretary, Examination Hall, 8–11, Queen-square, London, W.C.1, at least twenty-one days before the date of the Examination, transmitting at the same time such certificates as may be required by the Regulations of the Board.

HORACE H. REW, Secretary.

Royal College of Surgeons of England.

There will be an additional Final F.R.C.S. Examination beginning on THURSDAY, 5TH FEBRUARY, 1942. Candidates must submit their applications in writing, in accordance with the regulations, not later than Thursday, 15th January, 1942, to the undersigned.

HORACE H. REW, Director of Examinations R.C.S.
The Examination Hall, Queen-square, London, W.C.1.
12th December, 1941.

BRITISH POSTGRADUATE MEDICAL SCHOOL

(UNIVERSITY OF LONDON)

WAR SURGERY OF ABDOMEN

5th to 9th January, 1942

Monday, 5th Jan.	10 A.M.	Introduction	Sir James Walton, K.C.V.O., M.S., F.R.C.S., F.A.C.S.
	11.15 A.M.	Types of Abdominal Wounds and their Consequences.	Mr. V. Zachary Cope, M.S., F.R.C.S.
	12.15 P.M.	Pre-operative and Post-operative Treatment of Abdominal Wounds.	Mr. R. H. Franklin, F.R.C.S.
	2 P.M.	Operative Surgery Demonstration.	Mr. A. K. Henry, F.R.C.S.
Tuesday, 6th Jan.	10 A.M.	Injuries of the Kidney and Ureter, including Gunshot Wounds.	Mr. John Everidge, O.B.E., F.R.C.S.
	11.15 A.M.	The Bladder in War Injuries.	Mr. John Everidge, O.B.E., F.R.C.S.
	2 P.M.	The Pathology of Abdominal Wounds.	Mr. R. T. Payne, M.S., F.R.C.S.
Wednesday, 7th Jan.	10 A.M.	Wounds of Solid Viscera..	Prof. G. Grey Turner, LL.D., D.Ch., M.S., F.R.C.S.
	11.15 A.M.	Gunshot Wounds in the Field.	Lieut.-Col. W. Underwood, F.R.C.S.
	12.30 P.M.	X-ray Demonstration ..	Dr. Duncan White, M.B., Ch.B., D.M.R.E.
	2 P.M.	Immediate Complications of Abdominal Wounds.	Surg.-Comdr. Frank Stabler, M.D., F.R.C.S.
	3 P.M.	Some Late Complications and Sequelæ.	Surg.-Comdr. Frank Stabler, M.D., F.R.C.S.
Thursday, 8th Jan.	10 A.M.	Gunshot Wounds of Rectum and Large Bowel.	Mr. G. T. Mullally, M.S., F.R.C.S.
	11.15 A.M.	Technique of Operation for Abdominal Wounds.	Lieut.-Col. W. Underwood, F.R.C.S.
	2 P.M.	Gunshot Wounds of Urethra.	Mr. Clifford Morson, O.B.E., F.R.C.S.
	3.15 P.M.	Gunshot Wounds of External Genitalia.	Mr. Clifford Morson, O.B.E., F.R.C.S.
Friday, 9th Jan.	10 A.M.	Abdomino-thoracic Wounds.	Mr. R. C. Brock, M.D., F.R.C.S.
	11.15 A.M.	Complications of Gunshot Wounds of Rectum and Large Bowel.	Mr. A. L. Abel, M.S., F.R.C.S.
	12.30 P.M.	Anæsthesia	Dr. H. Woodfield Davies, L.M.S.S.A.
	2 P.M.	Some Personal Observations on Casualties Seen in the Present War.	Brig. P. H. Mitchiner, C.B.E., M.S., F.R.C.S.

The fee for the Course is one guinea. Officers of the Armed Forces wishing to attend these lectures without payment of the fee should apply through their respective Director-Generals. Applications for admission should be addressed to the DEAN, British Postgraduate Medical School, Ducane-road, London, W.12.

Further War Surgery Courses will commence as follows:—
WAR MEDICINE .. .. .. MONDAY, 19TH JANUARY, 1942.
TREATMENT OF FRACTURES .. MONDAY, 2ND FEBRUARY, 1942.

Child Guidance Council.

FELLOWSHIP IN PSYCHIATRY.

The Child Guidance Council offers a Fellowship of the value of £150 tenable for one year for half-time work at the Tavistock Clinic, Kidderpore-avenue, Hampstead, London, N.W.3.

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The successful candidate will be expected to start work in February, 1942.

Applications should reach the MEDICAL DIRECTOR, Child Guidance Council, 23, Queen-square, Bath, not later than 10th January, 1942, and should be accompanied by three copies of not more than three recent testimonials.

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For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

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A Private Clinic, the first in Great Britain, for investigation and treatment of all forms of disease, except infectious and mental

There is a steel and concrete Air Raid Shelter with heating and a lift to all floors

Inclusive charges — Apply SECRETARY — Telephone: Ruthin 66

THE COTSWOLD SANATORIUM

On the Cotswold Hills seven miles from Cheltenham, Stroud and Gloucester. Fully equipped for the treatment of all forms of Tuberculosis. **Terms: 5½ to 9½ guineas per week, inclusive.** Full particulars from MEDICAL SUPERINTENDENT, Cotswold Sanatorium, Cranham, Gloucester. *Telephone:* Witcombe 81. *Telegrams:* "Hoffman, Birdlip."

CAMBERWELL HOUSE, 33, Peckham Road, London, S.E.5

Telegrams: "PSYCHOLIA, LONDON" — FOR THE TREATMENT OF MENTAL DISORDERS — *Telephone:* RODNEY 4242 (2 lines)

Completely detached Villas for mild cases. Voluntary Patients received. Twenty acres of grounds; own garden produce. Hard and grass tennis courts, putting greens, Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actino-therapy, prolonged immersion baths, shock and also modified insulin treatment. Chapel.

Senior Physician, Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are strictly moderate, may be obtained upon application to the Secretary

The Convalescent Branch is HOVE VILLA, BRIGHTON, and is 200 ft. above sea-level

HOLLOWAY SANATORIUM

VIRGINIA WATER

A Registered Hospital for the Treatment of MENTAL DISORDERS of the EDUCATED CLASSES. Founded by THOMAS HOLLOWAY in 1885.

This Institution is situated in a beautiful and healthy locality within easy reach of London. It is fitted with every comfort. Patients can have Private Bedrooms and Special Nurses as well as the use of General Sitting Rooms, at moderate rates of payment. Voluntary Patients can be admitted.

There is a Branch Establishment at CANFORD CLIFFS, BOURNEMOUTH, where Patients can be sent for a change and be provided with all the comforts of a well-appointed home.

For Terms, apply to—

The RESIDENT MEDICAL SUPERINTENDENT, St. Ann's Heath, Virginia Water, SURREY

CHEADLE ROYAL

CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES, and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

THE object of this Hospital is to provide the most efficient means for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by the Trustees of the Manchester Royal Infirmary. VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT *Telephone:* GATLEY 2231

HAYDOCK LODGE,

NEWTON-LE-WILLOWS, LANCASHIRE.

For the reception and treatment of PRIVATE PATIENTS of both sexes of the UPPER AND MIDDLE CLASSES suffering from Mental and Nervous Disorders, Alcoholism and Drug Addiction, either voluntarily, temporarily, or under certificate. Patients are classified in separate buildings according to their mental condition. Situated in park and grounds of 400 acres. Self-supported by its own farm and gardens in which patients are encouraged to occupy themselves. Every facility for indoor and outdoor recreation. For terms, prospectus, etc., apply MEDICAL SUPERINTENDENT. *Telephone:* Ashton-in-Makerfield 7311. *Telegraphic Address:* Wootton, Ashton-in-Makerfield.

CHISWICK HOUSE,

PINNER, MIDDLESEX.

Telephone: PINNER 234.

A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.

DOUGLAS MACAULAY, M.D., D.P.M.

ROYAL EARLSWOOD INSTITUTION

REDHILL, SURREY

For MENTAL DEFECTIVES of all ages

Training under medical supervision. Schools, Farm, Trade Workshops, Recreations. Fees £110 to £375 p.a. Election by votes of subscribers at reduced terms for necessitous trainable cases.

Apply, Secretary. Tel.: Redhill 344

CITY OF LONDON MENTAL HOSPITAL

Near DARTFORD, KENT.

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards.

THE MAGHULL HOMES FOR EPILEPTICS (Inc.)

MAGHULL (near LIVERPOOL)

FARMING and OPEN AIR OCCUPATION for PATIENTS

A few vacancies in 1st and 2nd Class Houses.

FEES: 1st Class (men only) from £3 per week upwards. 2nd Class (men and women) 32/- per week.

For further particulars apply: **C. EDGAR GRISEWOOD, A.C.A.** *Secretary,* **20, Exchange Street East, Liverpool, 2**

STRETTON HOUSE,

Church Stretton, Shropshire.

ESTABLISHED IN 1853.

A PRIVATE HOME for the treatment of gentlemen suffering from Mental and Nervous illness, including the allied Disorders of Alcoholism and the Drug Habit. All types of early Mental and Nervous Cases are received without Certificates as Voluntary Patients under the provisions of the Mental Treatment Act, 1930. Bracing hill country. See "Medical Directory," p. 2358.—Apply to the Medical Superintendent. 'Phone 10 P.O., Church Stretton.

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental Illness. All forms of treatment available. Fees from 4 gns. per week upwards according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician.

Apply to Dr. J. A. SMALL. **Telephone: Norwich 80**

UNIVERSITY EXAMINATION POSTAL INSTITUTION

17, RED LION SQUARE, LONDON, W.C.1

Over 50 years' experience

POSTAL AND ORAL COACHING FOR ALL MEDICAL EXAMINATIONS

MEDICAL PROSPECTUS (36 pages), sent gratis, along with List of Tutors, &c., on application to the Principal, 17, Red Lion-square, London, W.C.1. (Telephone: HOLborn 6313.)

Examining Surgeons:

FACTORIES ACT, 1937.

The following appointment as Examining Surgeon under the Factories Act, 1937, is vacant.

Applications should be sent to the CHIEF INSPECTOR OF FACTORIES, 28, Broadway, Westminster, S.W.1.

District	*County*	*Latest date for receipt of application*
CHIPPENHAM ..	WILTS ..	30th December, 1941.

The Willesden General Hospital,

Harlesden-road, N.W.10.

The Council of Management invite applications for the position of HONORARY MEDICAL REGISTRAR. Candidates must possess a registrable university degree of Doctor of Medicine or be members of the Royal College of Physicians, and they must not be engaged in general practice.

Applications stating the names of three referees (testimonials should not be sent), to be received not later than first post on Wednesday the 24th of December, by the SECRETARY, from whom a copy of the regulations may be obtained.

Queen Mary's Hospital for the East End,

Stratford, E.15.

Applications are invited from fully qualified and registered medical Men, including R practitioners within three months of qualification, for the following post: CASUALTY OFFICER (A), £200 per annum. The appointment will be for six months, commencing 1st January, 1942.

Candidates, who must be single, should send applications, together with copies of testimonials, to the undersigned forthwith.

BERNARD T. HEMPEL, Captain, Chairman.

St. Mark's Hospital for Cancer, Fistula,

AND OTHER DISEASES OF THE RECTUM,
City-road, London, E.C.1.

Applications are invited from Male registered medical practitioners, including R practitioners who now hold A posts, for the appointment of a HOUSE SURGEON (B2), for six months from 1st February, 1942. Salary at the rate of £200 per annum, with board, residence, and laundry.

Applications, with copies of testimonials, to reach the undersigned on or before 10th January, 1942.

RAYMOND BULL, Secretary.

Tilbury Hospital, Tilbury, Essex.

(SEAMEN'S HOSPITAL SOCIETY.) (116 Beds.)

Applications are invited from British Male registered practitioners for the appointment of HOUSE OFFICER (B2), now vacant. R practitioners holding A posts may apply when appointment will be for six months. Salary at the rate of £200 per annum, with full residential emoluments.

Applications (marked "Tilbury"), stating age, qualifications with dates, and testimonials, to be sent immediately to the undersigned.

F. A. LYON, Secretary.

Seamen's Hospital Society, Greenwich, S.E.10.

King Edward Memorial Hospital,
Ealing, W.13.

Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER AND HOUSE SURGEON (A), vacant 1st January, 1942, which includes duties in the Orthopædic, Children, and Eye Departments, including R practitioners within three months of qualification. Appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of two recent testimonials, should be sent to the undersigned immediately.

R. A. MICKELWRIGHT, House Governor.

30th November, 1941.

National Temperance Hospital,
Hampstead-road, N.W.1.

Applications are invited from registered medical practitioners (British) for the appointment of RESIDENT MEDICAL OFFICER (B1 post) to act as House Physician and carry out M.S. duties. The present occupant is due for call-up during January, 1942. Suitably qualified R practitioners holding B2 or B1 posts may apply. Salary according to experience payable by the Ministry, with board, residence, and laundry allowance.

Applications, stating qualifications, age, &c., with not more than three testimonials, by 23rd December, addressed to the SECRETARY.

The North Kensington Women's
WELFARE CENTRE (GYNÆCOLOGICAL AND BIRTH CONTROL CLINIC), 12, Telford-road, Ladbroke-grove, W.10.

Applications are invited from Women doctors only for the post of HONORARY CLINIC ASSISTANT at the above Centre. Applications from foreign doctors holding permission to practise in this country would be considered. The work would involve one birth control session weekly, on Monday or Friday afternoon, from 2 to 3.30 P.M.

Applications, accompanied by full particulars and testimonials, should be forwarded to the SUPERINTENDENT at the above address as soon as possible.

Connaught Hospital,
Walthamstow, E.17. (118 Beds.)

Applications are invited immediately from registered medical practitioners, including R practitioners within three months of qualification, for the following appointments: HOUSE SURGEON (A) and CASUALTY OFFICER (A), both vacant 5th January, 1942. If held by R practitioners, appointments will be for a period of six months. Salary at the rate of £175 per annum, with board, residence, and laundry.

Applications, stating age, qualifications, nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

R. HALTON HARRISON, General Secretary.

Metropolitan Borough of Islington.
APPOINTMENT OF TEMPORARY MEDICAL OFFICER (CIVIL DEFENCE)

Applications are invited for the post of Temporary Medical Officer (Male) for Civil Defence duties. The duties of the post will be concerned mainly with the training of Civil Defence personnel and assisting in the work of the Casualty Services as required.

The commencing salary will be £600 per annum in the case of a whole-time officer, but suitable candidates prepared to offer substantial part-time services, at a proportionate salary, would also be considered. The appointment will be terminable by one month's notice in writing on either side.

Applications, together with copies of three testimonials, should be sent to the Medical Officer of Health and endorsed "Medical Officer (C.D.)" not later than Monday, 5th January, 1942. W. ERIC ADAMS, Town Clerk.

Royal Sheffield Infirmary and Hospital.

Applications are invited from registered medical practitioners, Male or Female, including R practitioners within three months of qualification, for the post of ASSISTANT CASUALTY OFFICER (A) at the ROYAL HOSPITAL UNIT. Salary £80 per annum, with full residential emoluments. If held by an R practitioner, appointment will be for a period of six months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the SUPERINTENDENT, Royal Hospital, West-street, Sheffield, immediately.

Royal Sheffield Infirmary and Hospital.

Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1) at the ROYAL HOSPITAL UNIT, to become vacant on 15th February, 1942. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 31st December, 1941.

W. H. BOOTH, Secretary.

Barking Hospital, Barking, Essex.
RESIDENT SURGICAL OFFICER.

Applications are invited from British registered medical practitioners for the above-named B1 post, at a salary of £550 per annum. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. The post is an M.S. appointment, and applicants possessing a Fellowship or senior surgical degree will be preferred.

Applications, stating age, qualifications with dates, and experience, with three recent testimonials, should be addressed to the undersigned not later than 1st January, 1942.

C. LEONARD WILLIAMS, Medical Superintendent.

11th December, 1941.

Staffordshire County Council.
ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH AND MEDICAL OFFICER OF HEALTH.

Applications are invited for the joint whole-time appointment of an Assistant County Medical Officer of Health for the Administrative County of Stafford and Medical Officer of Health for the Darlaston Urban District (population 20,300). The salary will be at the rate of £800 per annum, and will be subject to the provisions of the Local Government Superannuation Act, 1937.

Applicants must be fully qualified medical Men with experience in public health duties and must hold the Diploma in Public Health. The person appointed will, as regards his duties as Assistant County Medical Officer of Health, act under the direction of the County Medical Officer of Health, and will be required to perform such duties as may be from time to time prescribed. As regards his duties as District Medical Officer of Health, the officer will be subject to the sole control and direction of the local Sanitary Authority.

The joint appointment is subject to the approval of the Minister of Health and Board of Education, and also, so far as the office of District Medical Officer of Health is concerned, to the provisions of the Sanitary Officers (Outside London) Regulations, 1935.

The joint appointment will be subject to three calendar months' notice on either side, subject, so far as the office of District Medical Officer of Health is concerned, to the consent of the Minister of Health.

The successful candidate will be required to pass a medical examination and to produce a birth certificate.

Forms of application may be obtained from the undersigned, and should be returned by first post on the 1st January, 1942, together with copies of not more than three testimonials.

H. L. UNDERWOOD, Clerk of the County Council.

County Buildings, Stafford, 12th December, 1941.

Derbyshire County Council.
TEMPORARY APPOINTMENT OF WOMAN ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICER.

The Derbyshire County Council require the services of a fully qualified whole-time Temporary Woman Assistant Maternity and Child Welfare Medical Officer with experience in antenatal work, midwifery, and children's diseases, to hold (under the direction of the County Medical Officer of Health) consultations at the Antenatal and Maternity and Child Welfare Centres of the Derbyshire County Council, and to perform such other duties as appertain to the office.

The salary will be £600 per annum, rising by £25 per annum to £700 per annum.

The post will be subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination.

Forms of application may be obtained from the undersigned, to whom they must be returned, together with copies of not more than three recent testimonials, not later than 3rd January, 1942. W. M. ASH, County Medical Officer of Health.

New County Offices, St. Mary's Gate, Derby,
12th December, 1941.

Addenbrooke's Hospital, Cambridge.

Applications are invited for the following appointments from registered medical practitioners, Male and Female (unmarried):

(*a*) HOUSE SURGEON (A), to become vacant on 1st February, 1942.
(*b*) HOUSE PHYSICIAN (A), to become vacant on 14th February, 1942.
(*c*) HOUSE PHYSICIAN (A), at the LEYS SCHOOL ANNEXE, to become vacant on 19th February, 1942.

R practitioners within three months of qualification may apply. The appointments will be for a period of six months, but terminable at an earlier date by one month's notice on either side. Salary in each case is at the rate of £130 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than Wednesday, 31st December, 1941.

J. A. BEARDSALL, Secretary-Superintendent.

Royal Surrey County Hospital,
GUILDFORD. (475 Beds.)

Applications are invited from registered medical practitioners, Male (including R practitioners within three months of qualification), for the appointment of HOUSE SURGEON (A), vacant on 5th January. The appointment is for six months and is recognised for the F.R.C.S. examination. Salary £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and copies of not more than three testimonials, must reach the SECRETARY-SUPERINTENDENT by the 30th December, 1941.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £600 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

Liverpool and District Hospital for

DISEASES OF THE HEART,
34, Oxford-street, LIVERPOOL, 7.

Applications are invited from registered medical practitioners (Male and Female), including R practitioners within three months of qualification, when appointment will be for a period of six months, for the appointment of a HOUSE PHYSICIAN (A). To commence 1st January, 1942. Salary is at the rate of £100 per annum, with full residential emoluments. Facilities for M.D. thesis.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

Miss J. LEWIS, Secretary.

Salford Royal Hospital.

Applications are invited from registered medical practitioners, Male and Female, including R practitioners within three months of qualification, for the following appointment: HOUSE SURGEON (A) to SPECIALS DEPARTMENT, which will become vacant on 19th January, 1942. Salary at the rate of £125 per annum, with full residential emoluments. The appointment is normally for six months.

Applications, on the prescribed form, should be sent at once to the undersigned, from whom further particulars and form of application are obtainable.

H. B. SHELSWELL, General Superintendent and Secretary.
5th December, 1941.

Watford and District Peace Memorial

HOSPITAL.

Applications are invited from registered medical practitioners, Male and Female, for the appointment of Two HOUSE SURGEONS (A), to become vacant on the 9th January and 31st January, including R practitioners within three months of qualification when appointment will be for a period of six months. Salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 27th December.

H. M. MASKELL, Secretary.

District Infirmary, Ashton-under-Lyne.

(200 Beds, mainly Surgical.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of a HOUSE SURGEON (A) immediately, including R practitioners within three months of qualification, when the appointment will be for a period of six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

FRANK OLIVER, General Superintendent and Secretary.

City of Plymouth.

MOUNT GOLD HOSPITAL. (200 Beds.)

Applications are invited for the post of RESIDENT SURGICAL OFFICER (B1) at the above Hospital. The duties are mainly in the Orthopædic and M.S. sections of the Hospital, but the person appointed may be required for duties in the Pulmonary Tuberculosis wards. Applicants should have held house appointments and had surgical experience. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £300 per annum, with full residential emoluments and a war bonus of £15 12s. per annum. The appointment is terminable by one month's notice on either side.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous experience, and accompanied by copies of three recent testimonials, should be sent to the undersigned as soon as possible and not later than January 12th, 1942.

The Medical Officer of Health.
Seven Trees, Lipson-road, Plymouth.

Bucks County Council.

APPOINTMENT OF MEDICAL SUPERINTENDENT.

Applications are invited from registered medical practitioners for the appointment of Medical Superintendent of the AMERSHAM HOSPITAL.

The Hospital has accommodation for 336 patients, and is administered under the Hospital Scheme.

Hospital administrative experience is desirable and would prove an additional qualification.

The salary will be at the rate of £800 per annum inclusive, with single residential emoluments, or an annual allowance of £100 in lieu.

The person appointed will be expected to devote the whole of his time to the duties and to reside in, or within reasonable distance of, the Hospital.

Applications, stating age, qualifications, and experience, accompanied by two recent testimonials, should be forwarded to Mr. R. A. Hogarth, Public Assistance Officer, 18, Walton-street, Aylesbury, endorsed "Medical Superintendent," not later than 3rd January, 1942.

GUY R. CROUCH, Clerk of the County Council.
County Hall, Aylesbury, 12th December, 1941.

Kent County Ophthalmic and Aural

HOSPITAL, MAIDSTONE. (158 Beds.)

Applications are invited from registered medical practitioners of either sex for the post of OPHTHALMIC HOUSE SURGEON (B2), to become vacant in mid-January, including R practitioners who now hold A posts when appointment will be limited to six months; otherwise it will possibly be extended for a second six months. Applicants should have had experience in Ophthalmology. The Hospital is fully recognised by the Examining Board for the D.O.M.S. Salary is at the rate of £350 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, should be sent to the undersigned.

JOHN W. STRICKLAND, Secretary.

The Royal Hospital, Wolverhampton.

(Incorporated under Royal Charter. 310 Beds.)

Applications are invited from registered medical practitioners, including R practitioners within three months of qualification, for the following post. CASUALTY OFFICER (A) vacant now. Salary at the rate of £200 per annum with full residential emoluments. The appointment is for six months.

Applications, stating age, qualifications, with dates and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

15th December, 1941. W. H. HARPER, House Governor.

Royal Berkshire Hospital, Reading.

Applications are invited from registered medical practitioners for the following appointments, which fall vacant on the dates stated: HOUSE SURGEON (A), 24th January, 1942; RESIDENT MEDICAL OFFICER (A) at the BLAGRAVE BRANCH HOSPITAL and Assistant to Pathologist, 4th February, 1942. R practitioners within three months of qualification may apply. The appointments are for six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

H. E. RYAN, Secretary and House Governor.

The Welsh National School of Medicine.

(UNIVERSITY OF WALES.)

A DEMONSTRATOR (Male or Female) is required in the DEPARTMENT OF PATHOLOGY AND BACTERIOLOGY of The Welsh National School of Medicine, Cardiff.

The appointment is a temporary one for a period not exceeding two years, at a salary at the rate of £250 per annum.

Further particulars may be obtained from the undersigned, to whom applications, accompanied by copies of testimonials, must be sent immediately.

S. C. EDWARDS, Secretary.
The Welsh National School of Medicine, The Parade, Cardiff.

County Borough of Smethwick.

ST. CHAD'S HOSPITAL.

TEMPORARY RESIDENT OBSTETRICS OFFICER (B1 POST).

Applications are invited for the post of Temporary Resident Obstetrics Officer in the Council's Municipal Hospital.

The officer appointed will be responsible for the proper treatment of patients in the Maternity and Gynæcological wards in the Hospital, and also for the conduct of antenatal, postnatal, and infant clinics. The officer will work under the directions of the visiting consulting obstetricians and will also be required to assist in the general, medical, and surgical work at the Hospital under the direction of the Medical Superintendent. Preference will be given to those candidates who hold or who are reading for membership of the College of Obstetrics and Gynæcology.

The salary will be at the rate of £350 per annum, rising, subject to satisfactory service, by annual increments of £25 to £450 per annum, with emoluments valued at £150 per annum. The appointment will be terminable by three months' notice on either side.

Forms of application may be obtained from the Medical Superintendent, St. Chad's Hospital, Hagley-road, Birmingham, 16, and must be returned to him as soon as possible, accompanied by copies of three recent testimonials. Canvassing, directly or indirectly, will disqualify.

FRANK CHAPMAN, Town Clerk.

Council House, Smethwick, 8th December, 1941.

General Hospital, Nottingham.

(Total 570 Beds.)

Applications are invited from registered medical practitioners (Male or Female), including R practitioners within three months of qualification, for the appointment of a HOUSE SURGEON (A) for the above Hospital. The appointment is for six months. Duties to commence on 24th January. Salary at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and copies of testimonials, should be sent to the undersigned.

HENRY M. STANLEY, House Governor and Secretary.

Northamptonshire County Council.

ST. JOHN'S EMERGENCY MATERNITY HOME, WESTON FAVELL, NORTHAMPTON.

Applications are invited from registered Women medical practitioners for the post of RESIDENT MEDICAL OFFICER (B1) at the above Home. Salary £350 per annum, together with board, residence, and laundry. The appointment is a temporary one for a period not exceeding the duration of the war, and is subject to one month's notice on either side. Candidates must have had experience as a House Surgeon in a Maternity Hospital.

Applications, stating age, nationality, qualifications, and experience, and accompanied by copies of not more than two recent testimonials, should be sent to the undersigned at once.

C. M. SMITH, County Medical Officer of Health.

County Health Department, Guildhall-road, Northampton, 1st December, 1941.

Chelmsford and Essex Hospital,

London-road, CHELMSFORD, ESSEX.

(235 Beds.)

Applications are invited for the post of CASUALTY OFFICER AND RESIDENT ANÆSTHETIST (A), Male or Female. R practitioners within three months of qualification may apply, when appointment will be for a period of six months. Salary £150 per annum, plus board, lodging, and laundry.

Apply, with recent testimonials, to the undersigned immediately. R. G. MORRISH, House Governor and Secretary.

Harrogate Royal Bath Hospital.

(National Hospital for Rheumatic Diseases.)

(Normal complement, 146 Beds.)

Applications are invited from registered medical practitioners (Male) for the appointment of a HOUSE SURGEON (A), to become vacant in January, 1942, including R practitioners within three months of qualification. The appointment is for six months. Salary at the rate of £200 per annum, with full residential emoluments. Special facilities for study and research (thesis).

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, to be sent to the undersigned. E. P. L. DIXON, M.A.

Harrogate Royal Bath Hospital, Harrogate.

Rotherham Hospital.

SECOND CASUALTY OFFICER (A).

Applications are invited from registered medical practitioners (Male) for the above appointment, now vacant, including R practitioners within three months of qualification when appointment will be for a period of six months. Salary £175 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, should be sent to the undersigned forthwith.

T. H. FLETCHER, Secretary-Superintendent.

Rotherham Hospital, Doncaster Gate, Rotherham, Yorks.

Manchester Royal Infirmary.

Applications are invited from registered medical practitioners, Male, for the appointment of SENIOR HOUSE SURGEON (Central Branch) (B1), to become vacant on 1st February, 1942. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £150 per annum, with residence.

Fifteen copies of applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by fifteen copies of three recent testimonials, should be forwarded not later than 1st January, 1942, to the undersigned.

By Order,

F. J. CABLE, General Superintendent and Secretary.

North Staffordshire Royal Infirmary,

STOKE-ON-TRENT.

Applications are invited from registered medical practitioners, including R practitioners holding A posts, for the post of HOUSE SURGEON to the EAR, NOSE, AND THROAT and EYE DEPARTMENTS (B2). The appointment will be for a period of six months, and salary is at the rate of £150 per annum, with board, residence, and laundry.

Applications, stating age, qualifications with dates, and nationality, accompanied by three copy testimonials, should be sent to the undersigned as soon as possible.

THORNBURROW GIBSON, Secretary and House Governor.

City and County of Newcastle upon Tyne.

NEWCASTLE GENERAL HOSPITAL. (900 Beds.)
SHOTLEY BRIDGE HOSPITAL. (900 Beds.)

APPOINTMENT OF HOUSE PHYSICIANS (A) AND HOUSE SURGEONS (A).

Applications are invited from registered medical practitioners for the above appointments, including R practitioners within three months of qualification. The appointments will be tenable for a period of six months. Salary £150 per annum, together with the usual residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of two recent testimonials, should be forwarded immediately to the MEDICAL OFFICER OF HEALTH, Health Department, Town Hall, Newcastle upon Tyne, 1.

Owing to the fact that the permitted establishment of refugee practitioners at the Hospitals is already complete, it is regretted that applications for above appointments from refugee practitioners cannot be considered.

Swansea General and Eye Hospital.

(470 Beds, including Annexe.)

Applications are invited from registered medical practitioners (Male or Female) for the following resident appointments:—

ANÆSTHETIST (B2), including R practitioners who now hold A posts when the appointment will be limited to six months; otherwise it will be for twelve months. Salary at rate of £150 per annum for the first six months and £200 for second six months.

HOUSE SURGEON (A), salary £150 per annum; and HOUSE PHYSICIAN (A), salary £150 per annum. R practitioners within three months of qualification may apply when appointment will be for six months.

The above appointments include full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be forwarded to the undersigned.

O. C. HOWELLS, Secretary-Superintendent.

The Liverpool Eye, Ear and Throat

INFIRMARY, Myrtle-street, LIVERPOOL, 7.

Applications are invited from registered medical practitioners (Male or Female) for appointment of OPHTHALMIC HOUSE SURGEON (B2), to become vacant on 1st January, 1942, including R practitioners who now hold A posts when the appointment would be limited to six months. Salary at rate of £120 per annum, with full residential emoluments.

Applications, stating age, experience, qualifications with dates, nationality, and present post, and accompanied by copies of three testimonials, should be sent to the undersigned not later than 25th December, 1941.

GEORGE NICKSON, Secretary.

Huddersfield Royal Infirmary.

(321 Beds.)

Male HOUSE SURGEON (A) required to commence duty on 14th January, 1942. R practitioners within three months of qualification may apply when appointment will be for a period of six months, otherwise is subject to renewal for a similar period of six months. Salary £150 per annum, with board, residence, and laundry. The Hospital is officially recognised for the surgical practice required of non-members before admission to the Final Fellowship Examination of the Royal College of Surgeons of England.

Applications, with copies of three recent testimonials, to be addressed to the undersigned.

H. J. JOHNSON, General Superintendent and Secretary.

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Corporation of Dundee.

PUBLIC HEALTH DEPARTMENT,
DUNDEE MENTAL HOSPITAL.

Applications are invited from registered medical practitioners, Male or Female, for the appointment of a JUNIOR ASSISTANT MEDICAL OFFICER (A), to become vacant on 3rd January, 1942. R practitioners within three months of qualification may apply, when appointment will be for a period of six months. Salary at the rate of £300 per annum, with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 31st December, 1941.

R practitioners who have been qualified for more than three months must have obtained the sanction of the Scottish Central Medical War Committee to their application.

A. ALLEN BELL, Medical Superintendent.

Ancoats Hospital, Manchester, 4.

Resident appointments vacant towards the end of January, 1942. Applications are invited for the following posts:—

RESIDENT MEDICAL OFFICER (B1), previous experience in a similar capacity preferred. Salary £150 per annum, plus 10 per cent. war bonus. Suitably qualified R practitioners holding B2 or B1 posts may apply.

HOUSE SURGEONS (A) (Two), General, required. Salary £100 per annum, plus 10 per cent. war bonus. R practitioners within three months of qualification may apply when appointment will be for a period of six months.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, if any, accompanied by copies of three recent testimonials, should be sent to the undersigned on or before 31st December.

HERBERT J. DAFFORNE,
General Superintendent and Secretary.

Manchester Northern Hospital

(General Hospital—113 Beds),
Cheetham Hill-road, MANCHESTER, 8.

Applications are invited from registered medical practitioners for the post of RESIDENT SURGICAL OFFICER (B1). The appointment is for six months from 1st January, 1942. Preference will be given to candidates holding diploma of F.R.C.S. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £200 per annum (with additional emoluments for services in the First Aid Post).

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to JAMES C. DANIELS, 38, Barton-arcade, Manchester, 3, as soon as possible.

Kettering and District General HOSPITAL.

APPOINTMENT OF A HOUSE PHYSICIAN (A).

Applications are invited from registered medical practitioners for the appointment of a House Physician (A), including R practitioners within three months of qualification when appointment will be for a period of six months. Salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned as soon as possible.

G. W. JACKSON, Secretary-Superintendent.

City of Manchester.

CRUMPSALL HOSPITAL. (1400 Beds.)
(Recognised under the Regulations for the F.R.C.S.)

APPOINTMENT OF RESIDENT ASSISTANT MEDICAL OFFICER (A).

Applications are invited from registered medical Men for the above appointment which is vacant now, including R practitioners within three months of qualification when the appointment will be for a period of six months; otherwise it will be for a period of twelve months. The duties of the post are surgical. The basic salary for the appointment is £200 per annum, or if held by an R practitioner as above £125 per annum, with board, residence, and laundry in addition. A temporary cost-of-living wages award is payable in addition to the foregoing salaries. The appointment is subject to the Manchester Corporation conditions of service.

Full information and forms of application may be obtained from the Medical Officer of Health, Hospitals Administration Section, P.O. Box 399, Town Hall, Manchester, 2, and applications for the post must be received by him not later than 30th December, 1941. Canvassing in any form is prohibited

R. H. ADCOCK, Town Clerk.

Town Hall, Manchester, 2, 10th December, 1941.

The Guest Hospital, Dudley.

(The Resident Staff consists of a Resident Surgical Officer and Three House Surgeons.)

Applications are invited from registered medical practitioners, Male, for the appointment of HOUSE SURGEON (A), including R practitioners within three months of qualification when the appointment will be for a period of six months. Salary at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

H. RAYMOND HURST, House Governor and Secretary.

10th December, 1941.

County Borough of Burton upon Trent

APPOINTMENT OF DEPUTY MEDICAL OFFICER OF HEALTH (MALE).

Applications are invited from duly qualified practitioners for the appointment of Deputy Medical Officer of Health, Assistant School Medical Officer, and Assistant Tuberculosis Officer at a commencing salary of £600 per annum (plus cost-of-living bonus which at present amounts to £24 per annum), rising, subject to satisfactory service, by annual increments of £25 to £750 per annum, together with a motor-car allowance of £35 per annum.

The appointment is subject to the provisions of the Local Government Superannuation Act, 1937, to the passing of a medical examination, and to determination by three months' written notice on either side.

The person appointed must have a Diploma in Public Health, special knowledge of the treatment of tuberculosis and infectious diseases, and must have had not less than three years' post-graduate experience. He will be required to devote the whole of his time to the duties of the office and to act under the direction of the Medical Officer of Health.

Forms of application will not be issued, but full particulars of duties and conditions of appointment will be supplied by me upon application.

Applications, stating age, experience, and qualifications, endorsed "Deputy Medical Officer of Health," must be delivered to me, with copies of not more than three recent testimonials, not later than the 31st December, 1941. Canvassing will disqualify.

H. BAILEY CHAPMAN, Town Clerk.

Town Hall, Burton upon Trent, 10th December, 1941.

The Warwickshire and Coventry JOINT COMMITTEE FOR TUBERCULOSIS.

KING EDWARD VII MEMORIAL SANATORIUM,
HERTFORD HILL, Near WARWICK.

APPOINTMENT OF JUNIOR ASSISTANT MEDICAL OFFICER.

Applications are invited from registered medical Women practitioners for the appointment of Junior Assistant Medical Officer at the above Sanatorium. The appointment will be for six months and may be renewed for a further period of six months. The salary is at the rate of £250 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the Medical Superintendent, King Edward VII Memorial Sanatorium, Hertford Hill, near Warwick, not later than 2nd January, 1942.

L. EDGAR STEPHENS, Clerk to the Joint Committee.

Shire Hall, Warwick, 9th December, 1941.

General Hospital, Nottingham.

(495 Beds + 75 M.S. Beds.)

Applications are invited from registered medical practitioners (Male and Female), including R practitioners within three months of qualification, for the appointment of RESIDENT CASUALTY OFFICER (A) for the above Hospital. Duties to commence on 24th January. The appointment is for six months. Salary at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and copies of testimonials, should be sent to the undersigned.

HENRY M. STANLEY, House Governor and Secretary.

The Staffordshire General Infirmary, STAFFORD.

Applications are invited from registered medical practitioners, Male and Female, for the appointment of a HOUSE SURGEON (A), including R practitioners within three months of qualification. The appointment will be for six months. Salary £175 per annum, with board-residence.

Applications, stating age, qualifications, and experience, accompanied by copies of three recent testimonials, should be sent to me forthwith.

Stafford, 5th December, 1941. A. E. COLLINS, Secretary.

Children's Hospital, Sunderland.

(70 Beds.)

HOUSE PHYSICIAN (Female) required for a period of six months. Salary £120 per annum, with board, residence, laundry, &c.

Applications, stating age and qualifications, and accompanied by testimonials, to be sent to the undersigned.

M. J. HUNTLEY, House Governor and Secretary.

Appointment of Works Medical Officer

to large group of Engineering Factories in the Midlands. Applications are invited for the services of a whole-time Medical Officer. Preference will be given to applicants who have had experience in a large general hospital in an industrial district, who hold the D.P.H., and are between thirty-five and fifty years of age. A minimum salary of £650 per annum will be paid.—Address, No. 834, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

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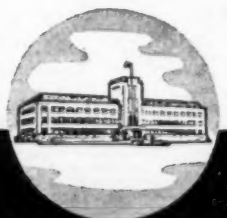

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